NOAA TECHNICAL MEMORANDUM NWS NSSFC-16

SEVERE THUNDERSTORM CASES OF JULY 1985 THRU JUNE 1986

John E. Hales, Jr. and Hugh G. Crowther
National Severe Storms Forecast Center
Kansas City, Missouri 64106

February 1987

U.S. DEPARTMENT OF COMMERCE / National Oceanic and Atmospheric Administration / National Weather Service

NOAA TECHNICAL MEMORANDA

National Weather Service
National Severe Storms Forecast Center

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No. 6 Severe Local Storm Warning and Event Summaries Available in AFOS. Preston W. Leftwich, Jr. and Lawrence C. Lee, January 1984, 10 p. (PB 84 150291).

No. 7 Severe Thunderstorm Cases of 1984. John E. Hales, Jr. and Hugh G. Crowther, May 1985, 88 p. (PB85 210748/AS).

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UNITED STATES
DEPARTMENT OF COMMERCE
Malcolm Baldrige, Secretary

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Atmospheric Administration
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Service
Richard E. Hallgren,
Assistant Administrator

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SEVERE THUNDERSTORM CASES OF JULY 1985 THRU JUNE 1986

JOHN E. HALES JR.
HUGH CROWTHER

ABSTRACT

Severe thunderstorm occurrences are relatively infrequent in much of the United States. As a result a forecaster only occassionally has an opportunity to forecast their development. This proves to be a problem as certainly one of the more important factors in forecasting them is the level of experience an individual forecaster has. Realizing the importance that experience plays and difficulty involved for a meteorologist to study past cases, a summary was compiled of all the organized severe thunderstorm episodes for the period from July 1985 thru June 1986. Included in each case were the times and locations of the severe weather along with specifics of the more noteworthy events. A composite of those parameters most frequently found to be associated with severe thunderstorms was included. Each case has a surface and 500mb analysis along with an infrared satellite photo. The objective was to give an overview to a forecaster as to what ingredients went into severe development with a more detailed analysis being left up to the individual.

INTRODUCTION

More severe thunderstorms occur in the United States than in any other area in the world. Organized severe thunderstorm episodes can occur in any section of the country and in any month of the year. The synoptic conditions that result in the development of these storms vary widely across the country. Severe storm climatology shows the episode frequency decreasing with distance from the center of the country, however only the Pacific coastal states lack a significant number of cases for any great concern.

One of the more important tools in forecasting severe thunderstorm episodes is experience. The more opportunities a forecaster has in working a severe weather situation, the greater his skill and confidence becomes. Unfortunately these episodes are infrequent enough that, with the exception of the most active areas in the central United States, an individual forecaster may only work a severe situation once or twice per year.

The usual technique for increasing ones experience base is to go back and examine the synoptic charts, particularly for cases

with which the forecaster was not previously involved. This can be a rather difficult undertaking because charts of interest may not be readily available and/or organized in a systematic manner. This is the case at the NSSFC, but it is often so to a much greater extent at the local field offices.

The purpose of this publication is to identify and organize those severe thunderstorm episodes that occurred across the nation for the period from July 1985 thru June 1986 into a handy and easy to use format such that a forecaster can readily review those cases that may be of interest to him. The selection procedure of the cases was not very restrictive and included most of the organized severe thunderstorm episodes that occurred nationally. In those areas where storms are rather infrequent, such as west of the Rocky Mountains, the selection threshhold was somewhat lower.

CASE FORMAT

The basic approach in compiling the cases was to provide the interested forecaster with a comprehensive, but not excessive, number of charts. The following is a description of each chart included.

Daily Activity Summary-A fairly tight depiction of the day's organized severe convection is shown(solid line). A listing of any noteworthy individual event is included for each day. The criteria for listing a report would be most of the F2(Fujita 1981) or greater tornadoes, tornadoes/wind damage that result in death, a significant number of injuries and/ or damage that generally exceeds $100,000. Storms that resulted in damage in excess of about $100,000 were included in the listing by category as used in Storm Data(U.S.Dept of Commerce 1985 and 1986). Those reports were then located on the activity summary chart by number. with an * not in a watch). Also included is a table listing the daily total of severe reports. Following the date there is included the time range of the organized severe occurrence. All times for this chart were in CST.

Composite Chart-The purpose of a composite is to represent on one chart those parameters important in producing severe thunderstorm. The basic composite is similar to that done in TR-200(e.g.,Miller, 1972) with some modifications. Instead of using the 850 Td, the mean mixing ratio(solid line g/kg) was incorporated as a better representation of the low level moisture supply. The relevent short wave trough(line of triangles)was taken from the 700mb level rather than 500mb. This was done for

two reasons a)the 500mb analysis being included in the study and b) a more frequent coorelation of troughs at 700mb with severe thunderstorm development. The polar and subtropical jet-stream is depicted by the maximum wind axis(wide solid line with arrowhead in kts) at the 250mb level. The lifted index analysis(dashed line) used the lower 100mb of moisture and a forecasted maximum surface temperature. Any areas of upper diffluence(zig zag line) and mid level drying(heavy dashed line), as well as the low level jet(line with arrowhead in kts), as shown on the 850 mb analysis, are included.

500mb Analysis- The NMC operational 500mb analyses using the observation time most relevant to the severe thunderstorm development was included.

Surface Analysis-The NMC operational analyses nearest either the time of initial severe thunderstorm development or the time of the most severe storm occurrence
was included.

Satellite Photo-The infrared photo closest to the time of the most severe storm occurrence of the day was included.

SUMMARY

The details of synoptic patterns that are associated with severe weather events are soon forgotton. However similar a severe weather situation seems to an earlier occurrence there are always important differences. Having available the pertinent synoptic conditions that were present in a past situation should enable a forecaster to better identify future storm producing patterns.

REFERENCES

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Fujita, T.T. and A.D. Pearson, 1973: Results of FPP classification of 1971 and 1972 tornadoes. Proc. 8th Conf. Severe

Local Storms, Amer. Meteor. Soc., Boston, 142-145.

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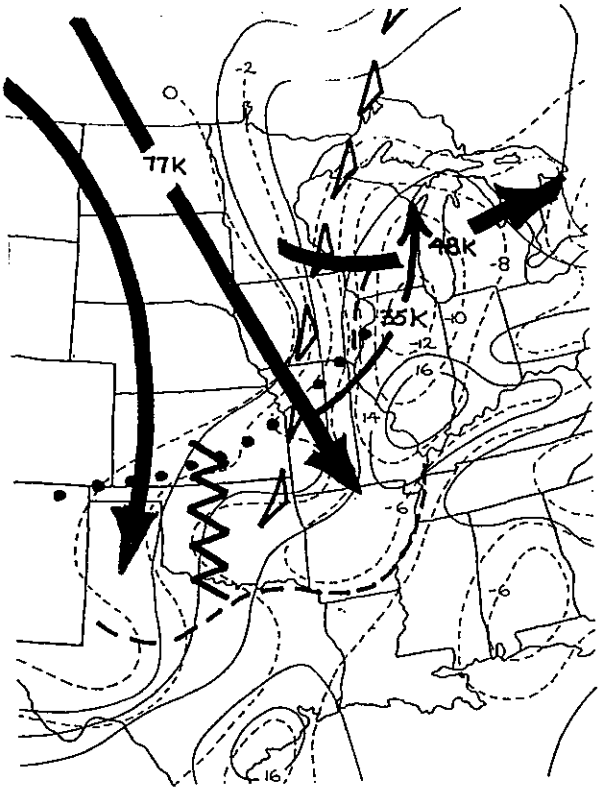
Hales, J.E. and Crowther, H.G., 1986:Severe Thunderstorm cases of 1985, NOAA Tech Memo NWS NSSFC-11., Kansas City, 51pp.

Miller, R.C., 1972: Notes on analysis and severe storm forecasting procedures of the Air Force Global Weather Central. Air Weather Service Tech. Report 200(Rev.), Headquarters AWS, Scott AFB, Il, 94 pp.

1. July 4, KS OK MO IL IN MI WI
2. July 9, WI IL MI IN OH PA WV
3. July 10, NC VA WV KY TN AL GA MD DE
4. July 14, KS NE IA MO IL IN MI OH PA WV
5. July 19, CO KS
6. July 25, VA MD DE
7. July 29, AZ
8. July 30, ID CO
9. July 31, PA MD DE NJ
10. August 1, WY CO
11. August 2, MT WY SD SD NE
12. August 6, KS OK NE IA MO MN WI IL
13. August 7, TX AR LA
14. August 12, WI IA
15. August 16, AL GA TN SC NC
16. August 17, KS
17. August 19, CO WY NE SD
18. August 21, ND SD
19. August 26, UT WY
20. August 30, PA MD DE NY CT RI MA
21. August 31, FL
22. September 8, MN IA WI IL MI IN
23. September 22, OK KS MO IA
24. October 28, LA MS AL FL GA
25. November 13, OK
26. November 18, OK MO AR IL
27. Novermber 19, IL IN
28. February 5, TX
29. February 10, GA
30. February 17, AR MS AL TN
31. March 10, IL IN OH KY PA
32. March 11, TX LA AR MS TN KY OK

33. March 12, MS AL KY TN
34. March 13, GA FL SC
35. March 14, FL
36. March 18, LA MS AL GA
37. March 31, KS OK
38. April 4, TX AR
39. April 7, KS OK MO AR
40. April 11, TX LA MS
41. April 13, OK KS NE TX AR
42. April 19, TX LA
43. April 26, NE KS IA SD MN
44. May 6, KS NE IA MO IL IN MI OH PA
45. May 7, SD NE KS OK IL IN OH KY
46. May 8, OK TX
47. May 10, SD NE KS OK
48. May 12, KS NE IA MO MN
49. May 14, KS OK AR MO IL KY IN
50. May 15, IL IN OH MI
51. May 16, KS OK TX IL
52. May 17, TX LA
53. May 18, LA MS AL
54. May 24, TX OK LA
55. June 1, NY NH VT MA ME
56. June 10, TX OK KS MO NE
57. June 16, OH NY PA VT NH
58. June 21, NE SD IA MN
59. June 26, ND SD



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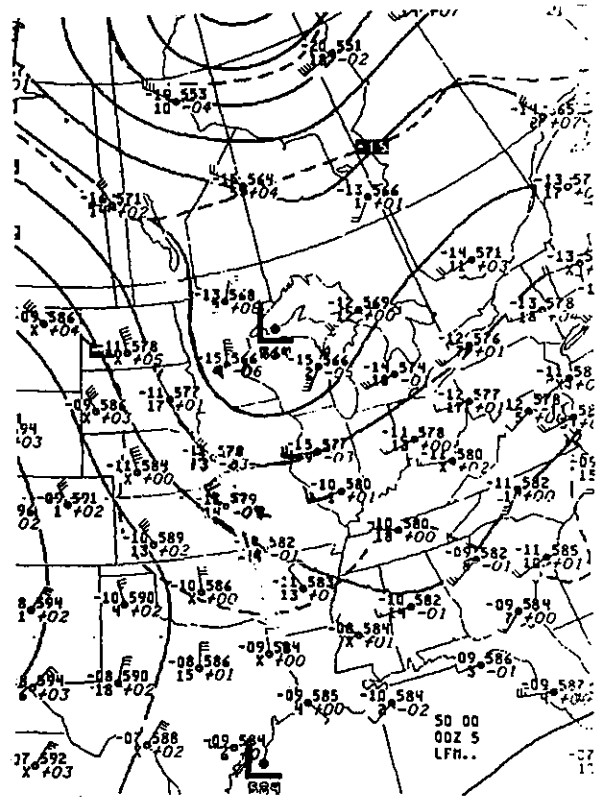
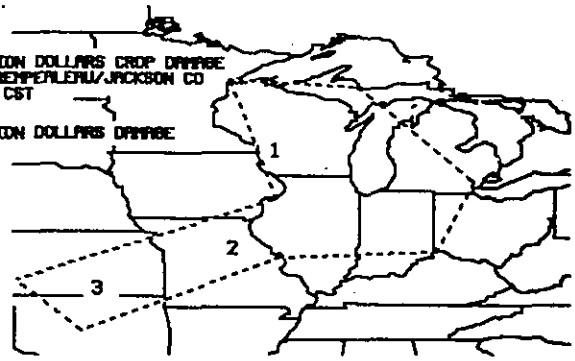


500 MB 6 PM CST July 4, 1985

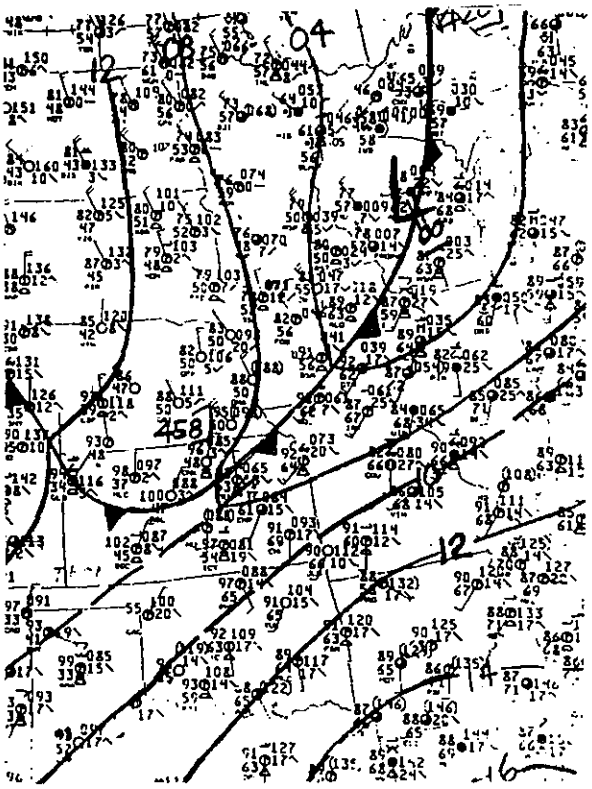
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1233	1.75 INCH HAIL	NE	HIXTON				6
2	1720	4.00 INCH HAIL	MO	HOLLIDAY				
3	1830	2.50 INCH HAIL	KS	ARKANSAS CITY				6

1 5 MILLION DOLLARS CROP DAMAGE
BUFFALO/TREMPEALEAU/JACKSON CO
1239-1500 CST

2 1 MILLION DOLLARS DAMAGE



04JUL85-05JUL85 1233-0247 CST 104 REPORTS 2 TORNADOES



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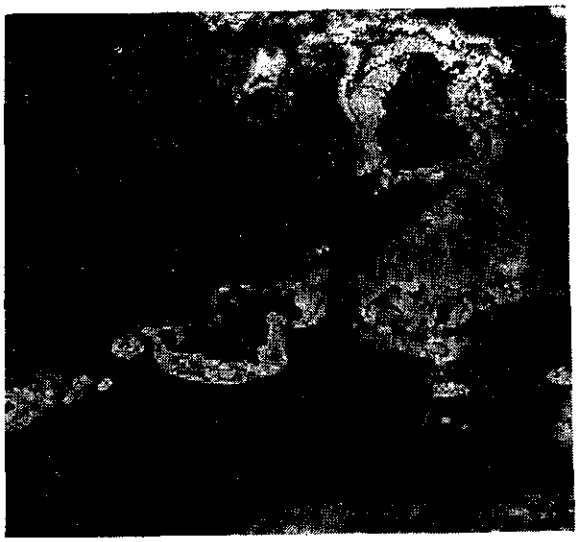

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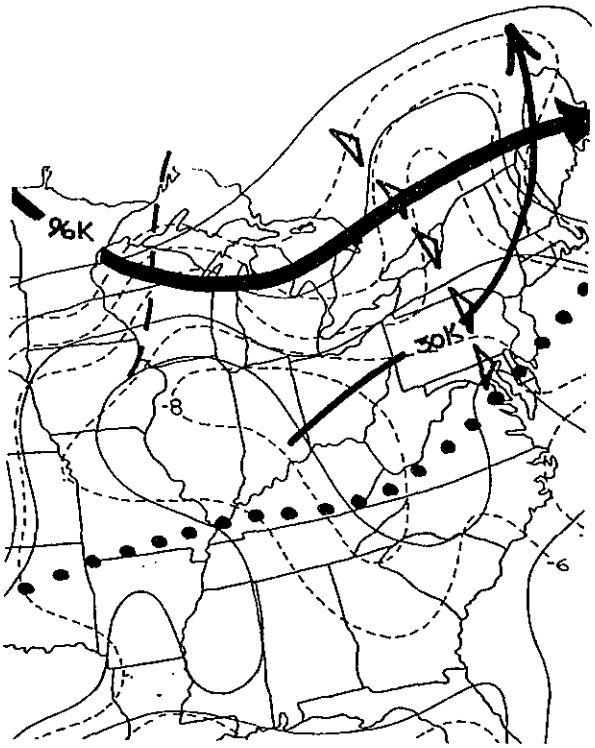

Composite 6PM CST July 9, 1985

NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
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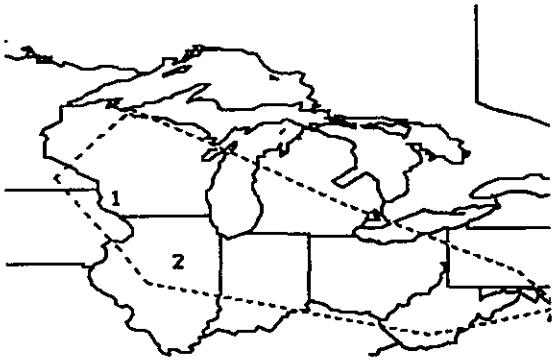
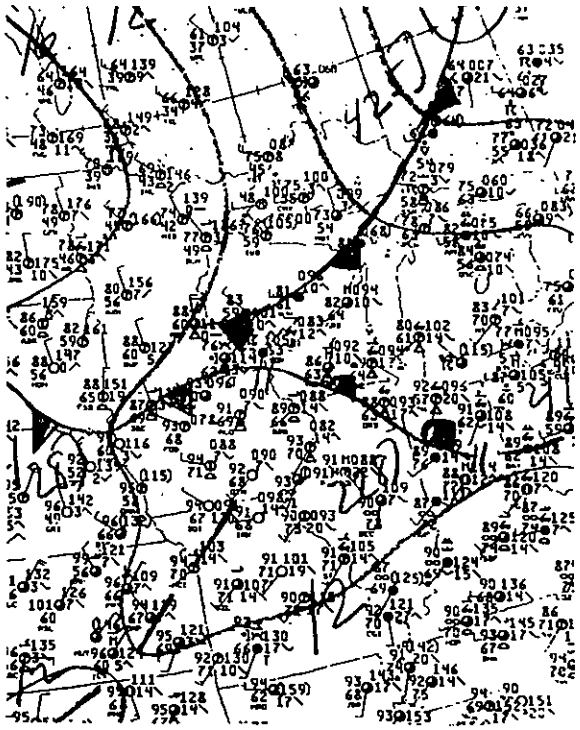
2	1530	TORNADO-F2	IL	DANA			8	5



09JUL85-10JUL85 1425-0520 CST 62 REPORTS 1 TORNADO



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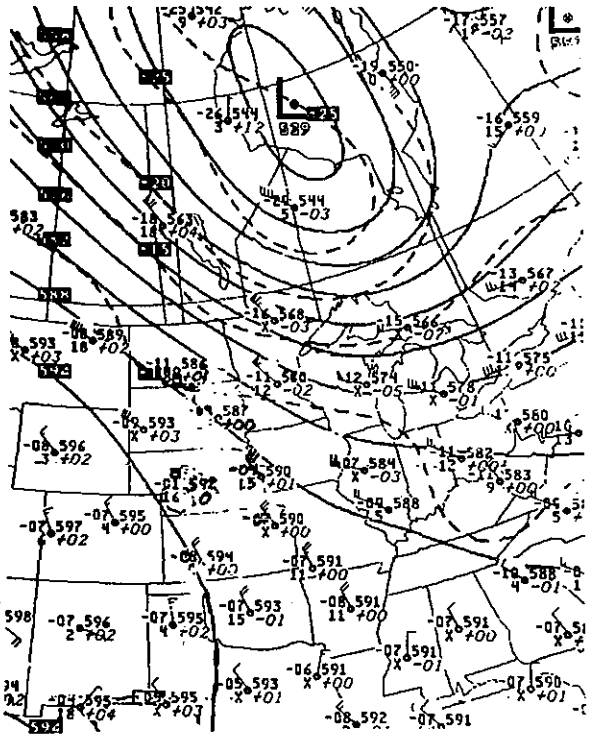

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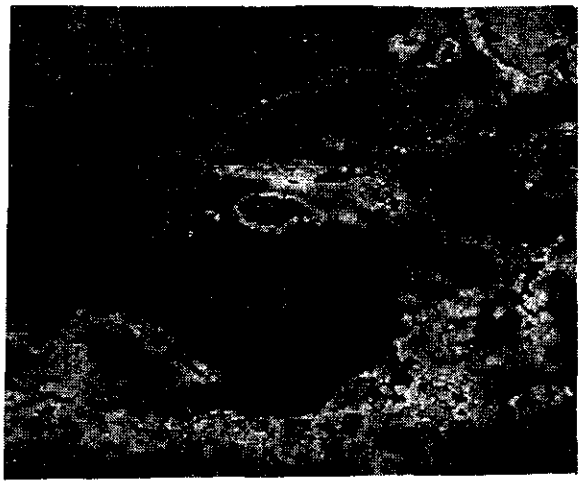

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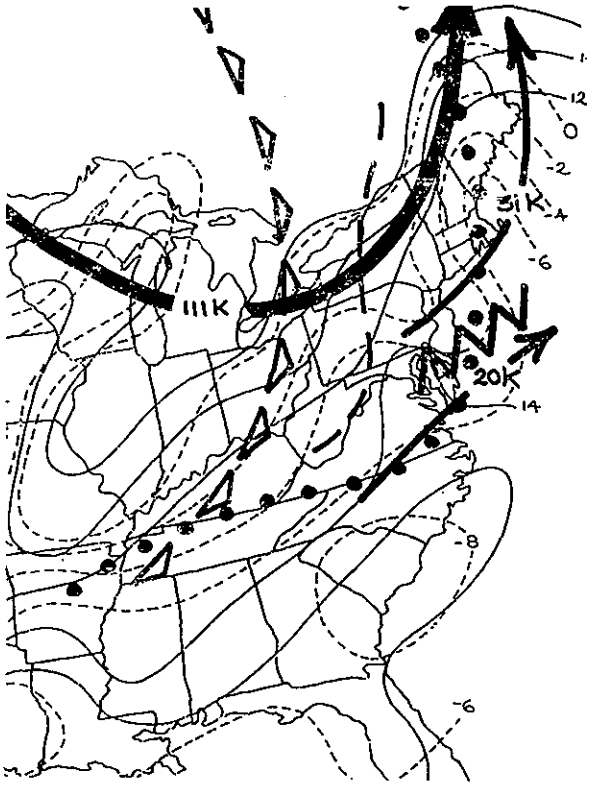

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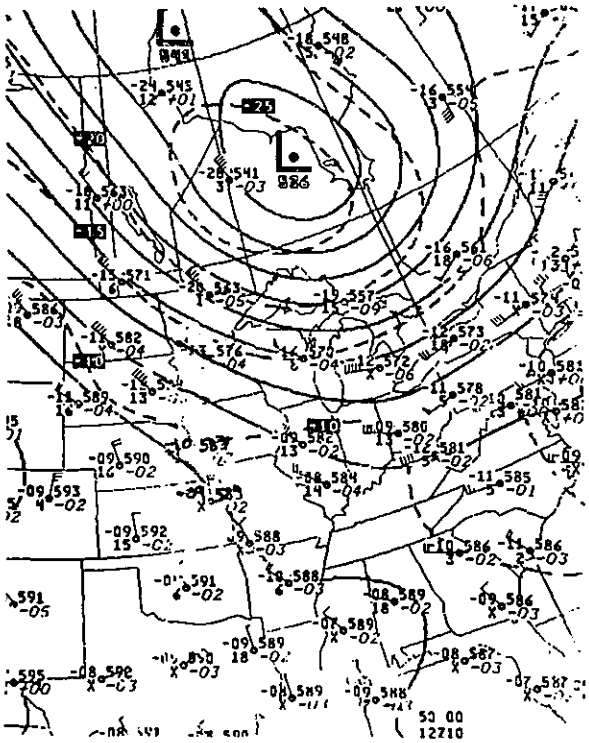

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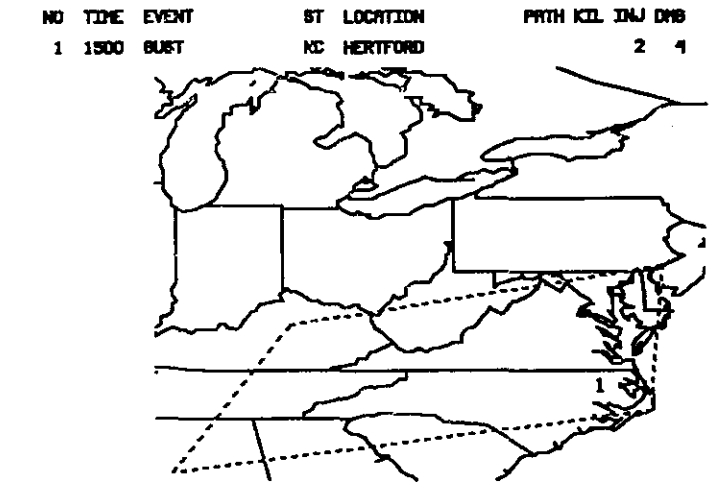

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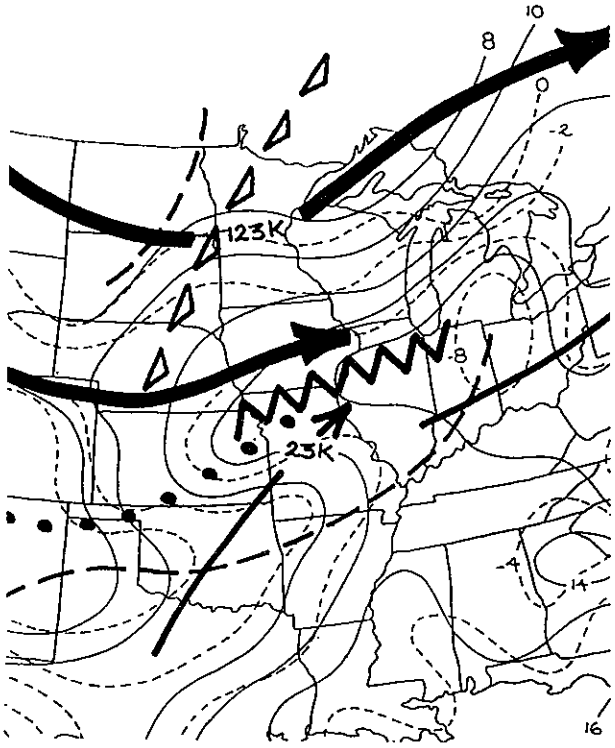
GOES 3PM CST July 10, 1985



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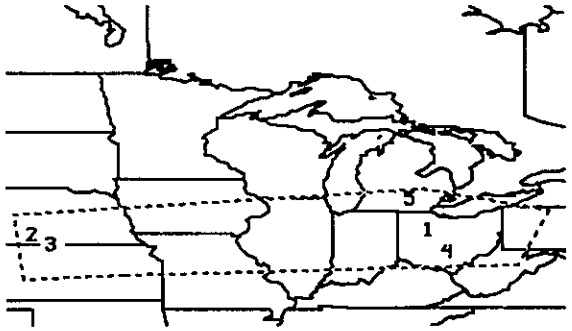
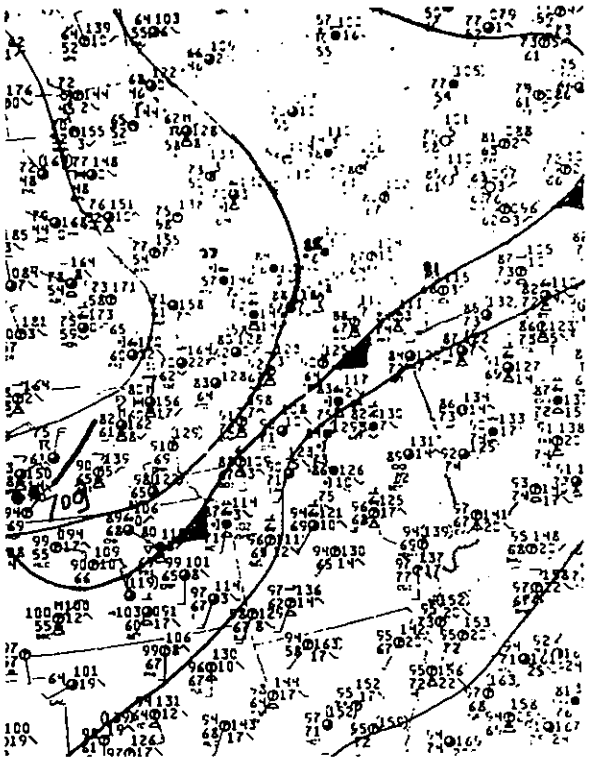
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1500	GUST	OH	BLOOMDALE			2	4
2	1520	3.00 INCH HAIL	NE	COZAD				7
3	1520	GUST 100 MPH	NE	ARAPAHOE				7
4	1830	GUST	OH	DELAWARE COUNTY		1		4
5	0329	TORNADO-F2	MI	EAST LANSING	16			5



14JUL85-15JUL85 0840-0435 CST 34 REPORTS 3 TORNADOES



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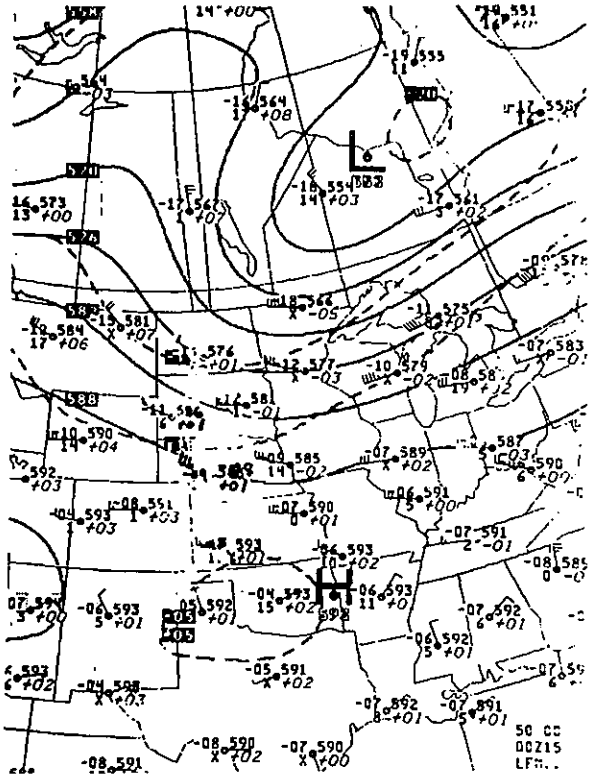

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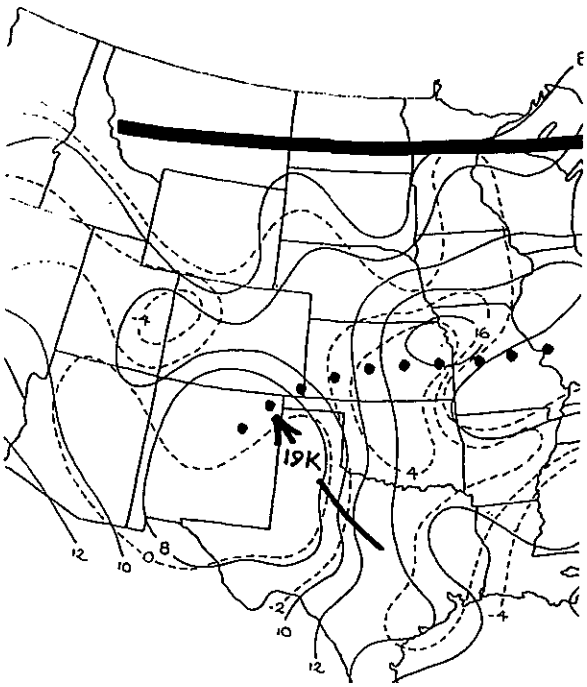

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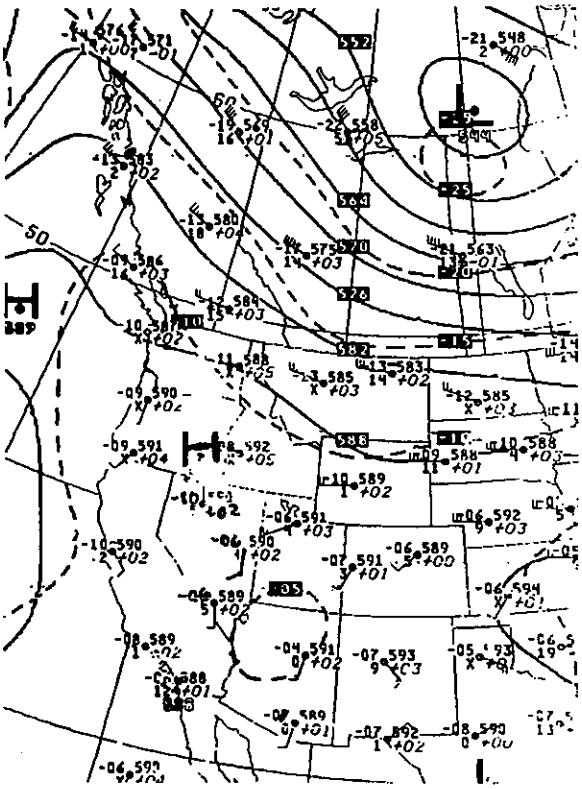

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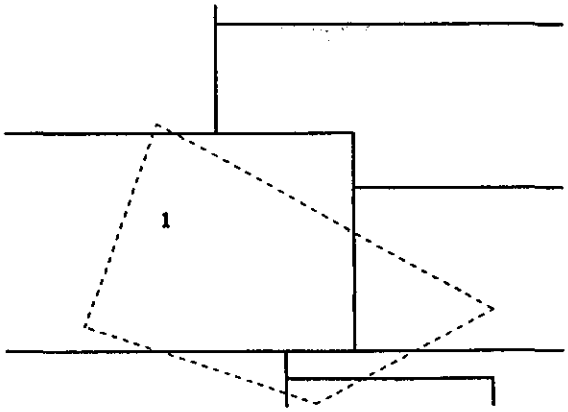
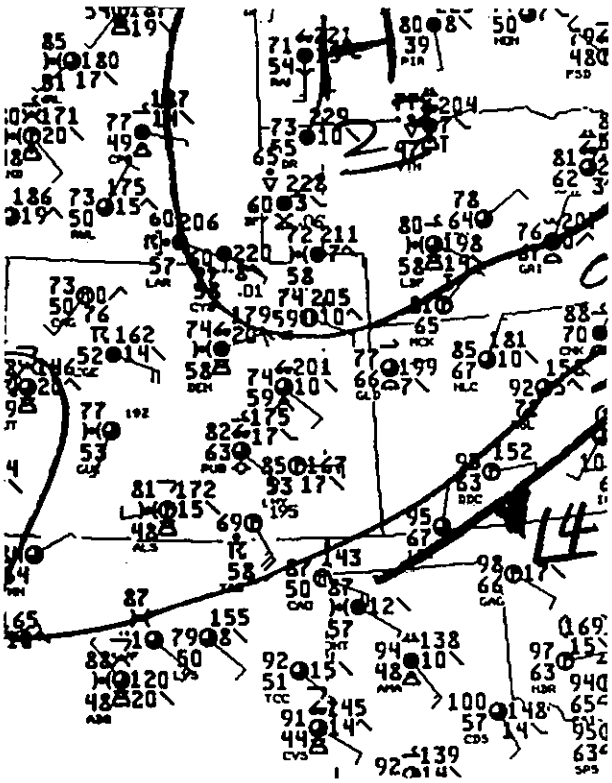
1	1807	TORNADO-F2	CO	BURREY RIDGE			3	5



19JUL85 1345-2155 CST 9 REPORTS 2 TORNADOES



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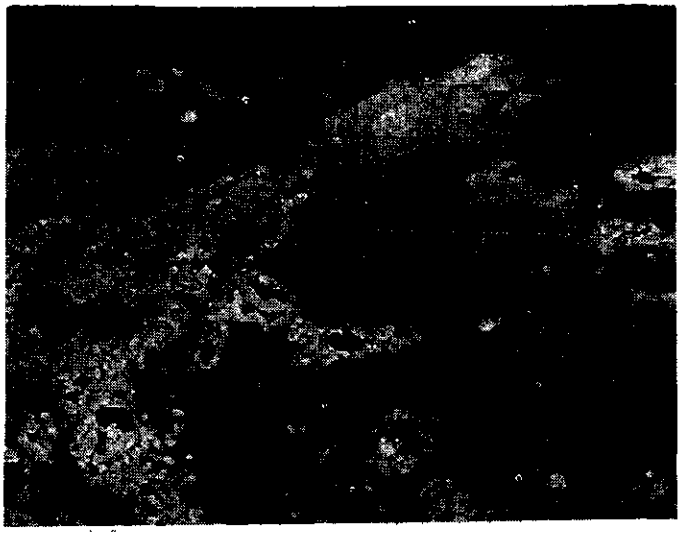

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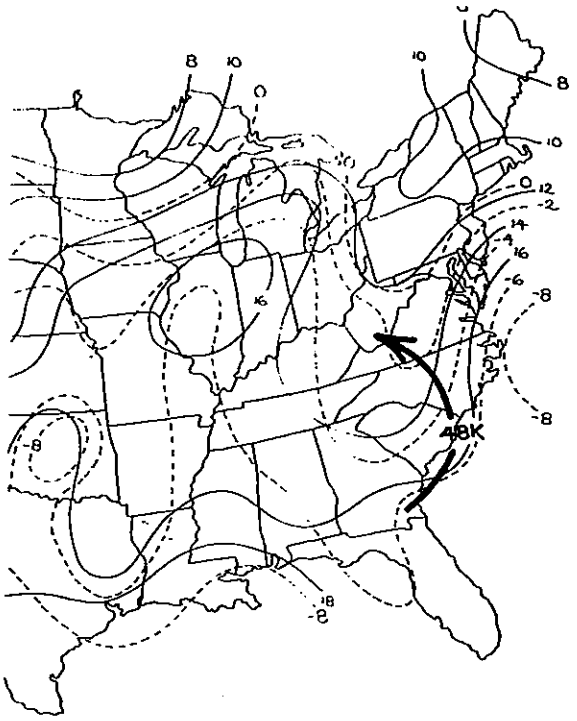

Composite 6AM CST July 25, 1985

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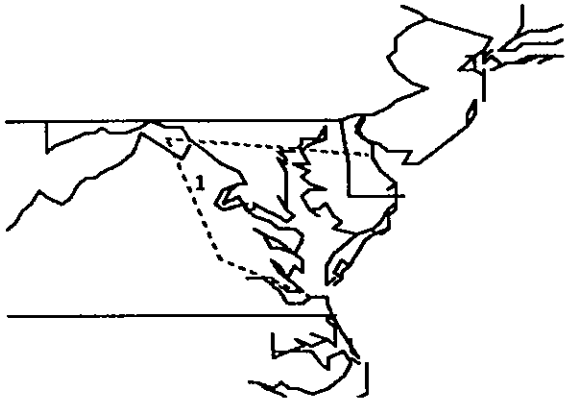
1	1214	TORNADO-F3	VA	ALBEMARLE COUNTY				5



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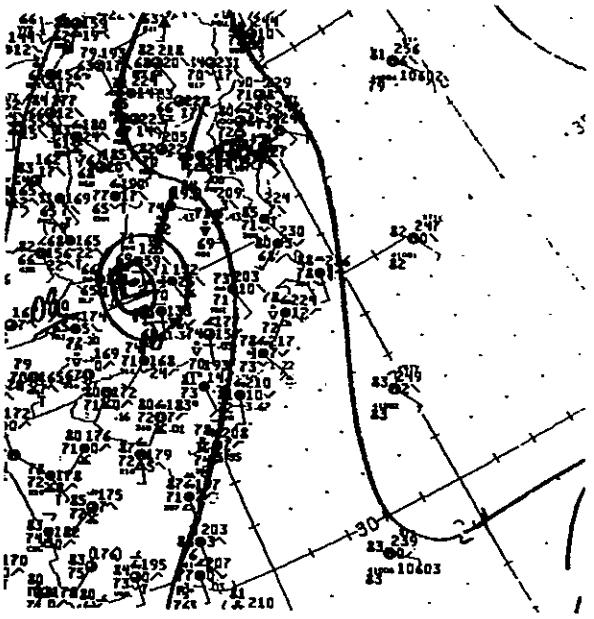

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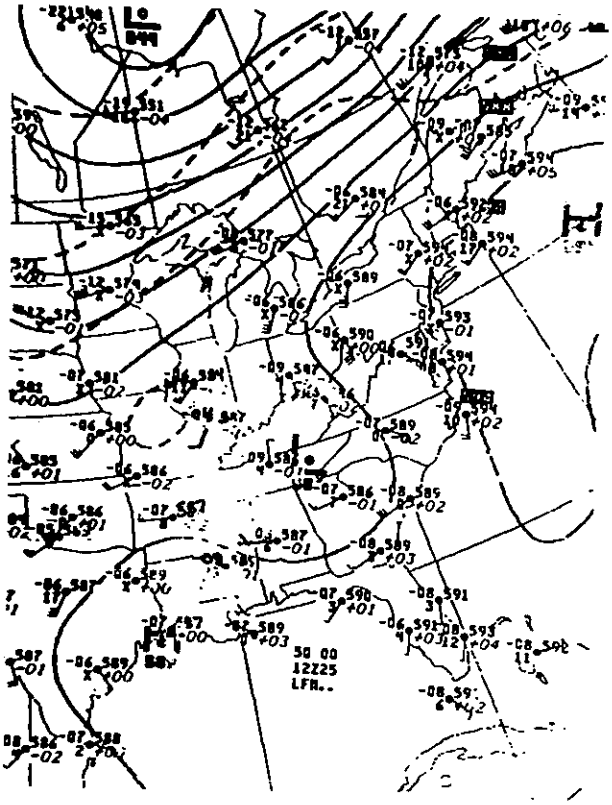

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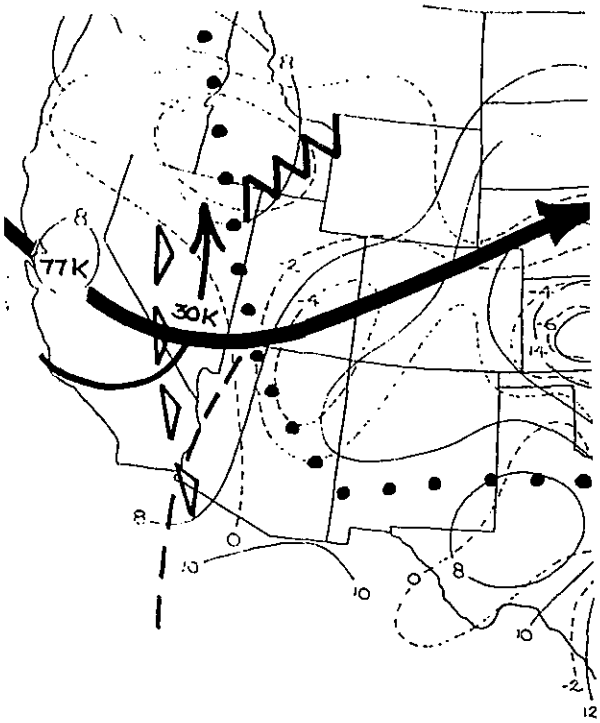

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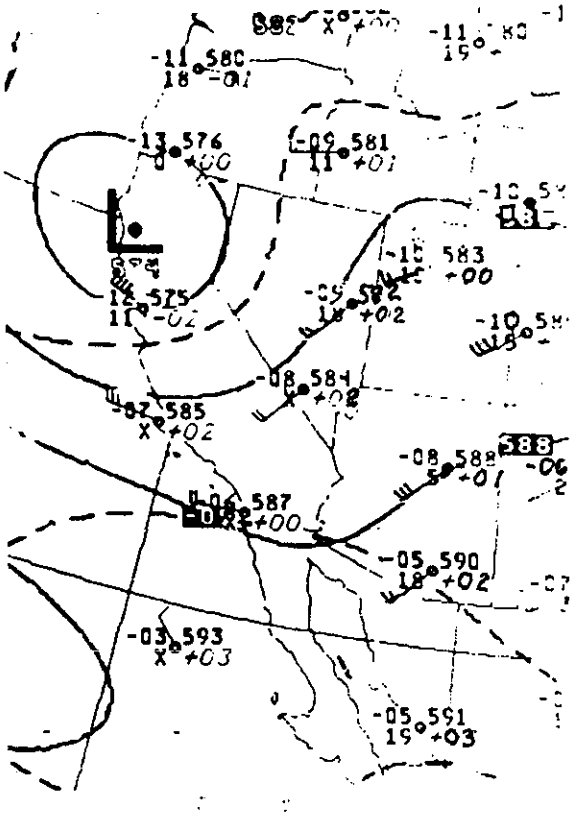

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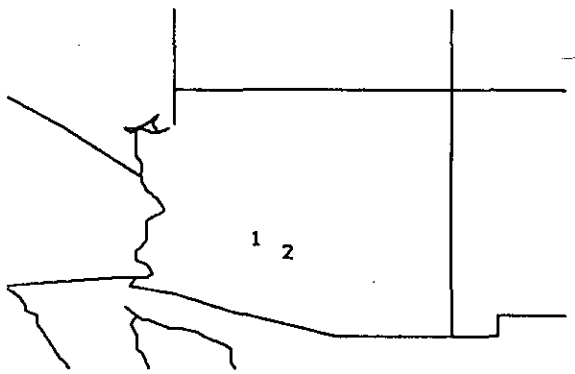
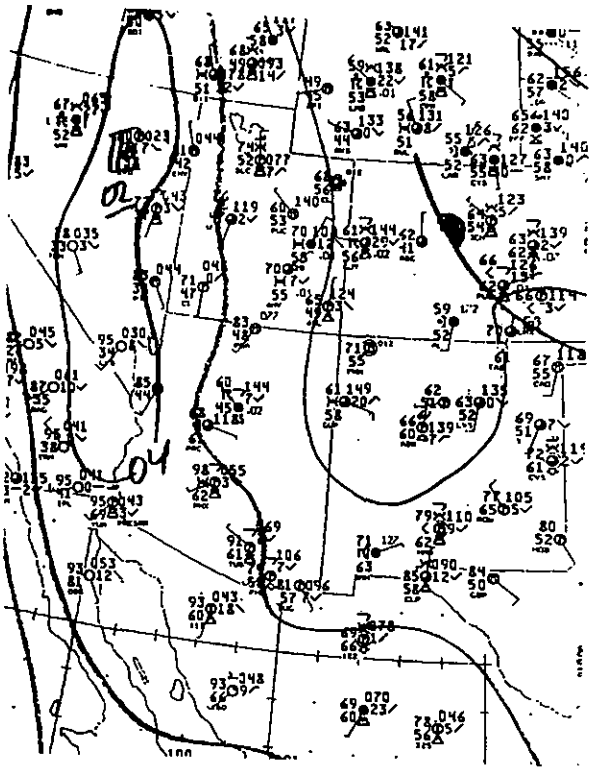
2	2315	GUST 90 MPH	AZ	PHOENIX		6	6	



29JUL85 THUNDERSTORM WINDS PHOENIX AND VICINITY



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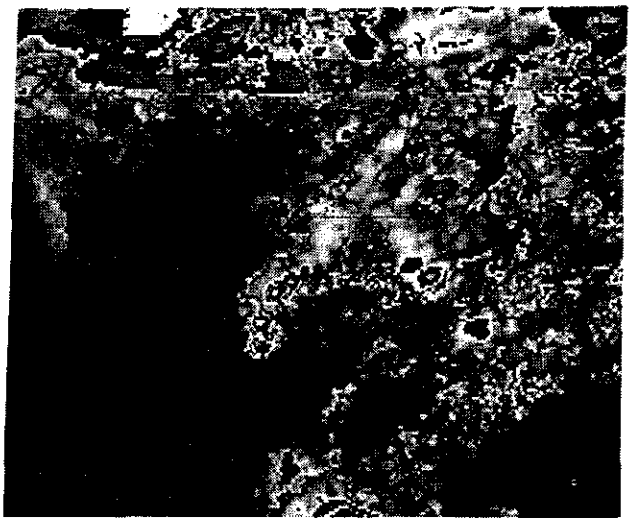

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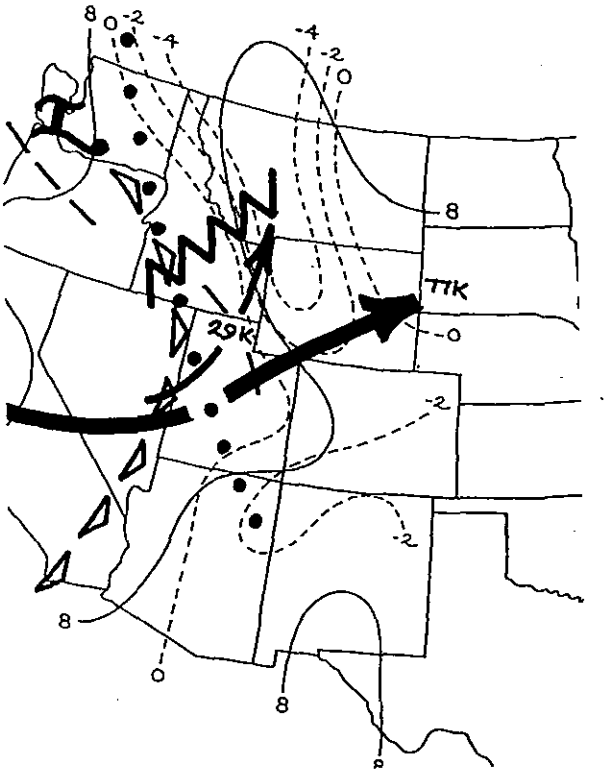
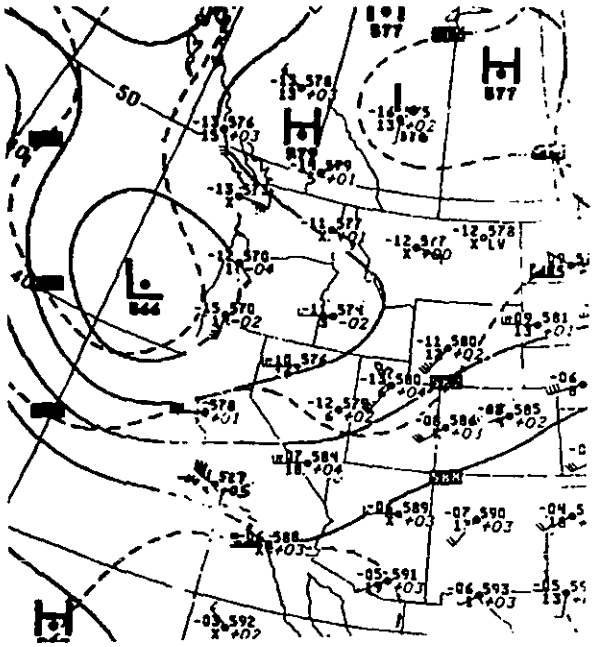
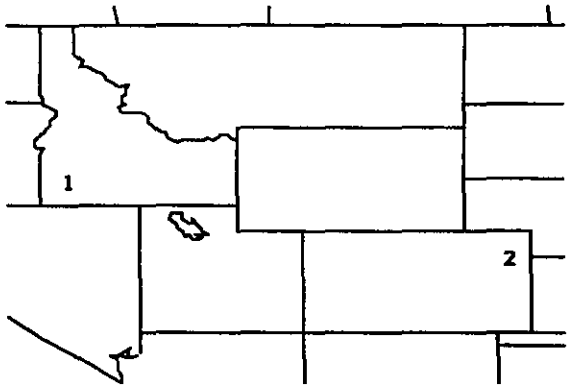


Composite 6PM CST July 30, 1985

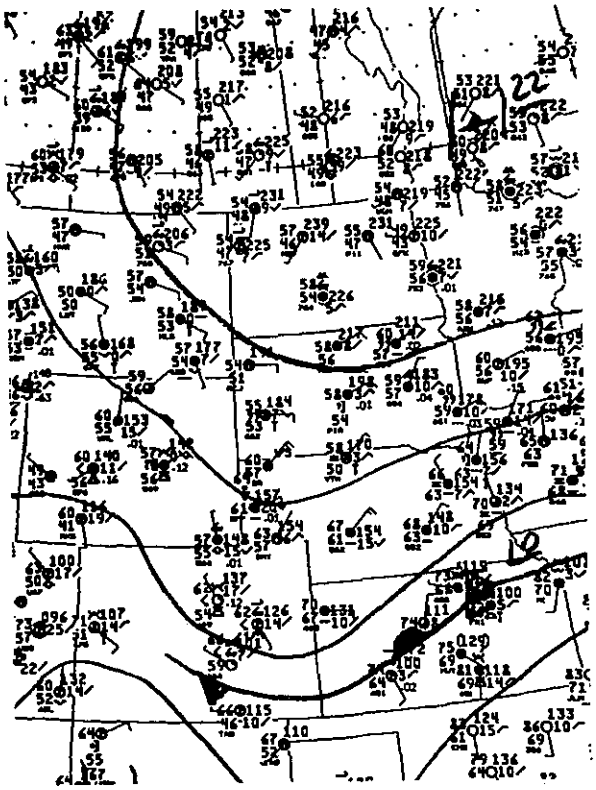


500 MB 6PM CST July 30, 1985

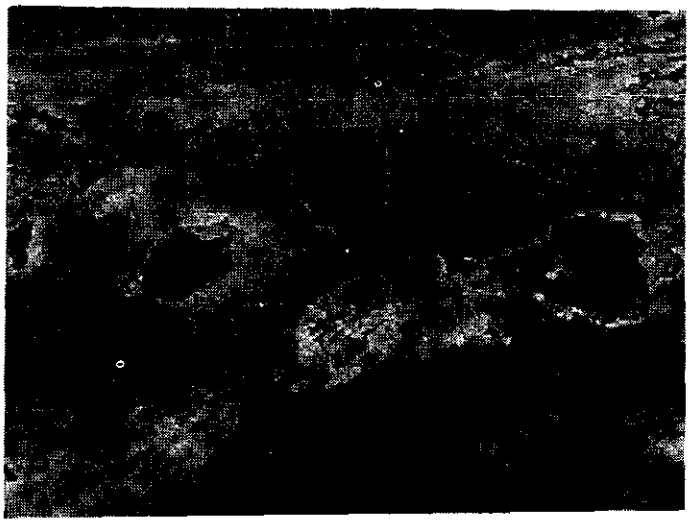
NO	TIME	EVENT	ST	LOCATION	PRTH	KIL	INJ	DMG
1	1600	HAIL	ID					5
2	0020	TORNADO-F2	CO	12 NE YUMA			2	5



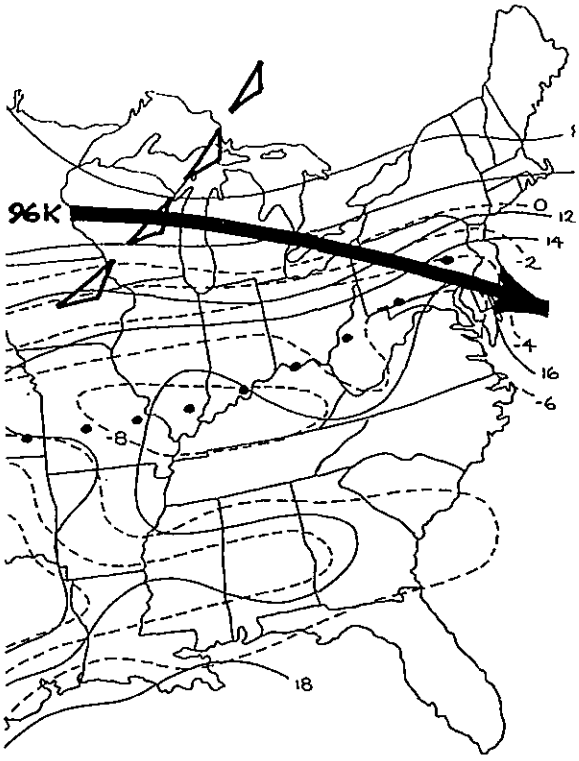
30JUL85-31JUL85 SEVERE WEATHER IN THE WESTERN STATES



Surface 12 Midnight CST July 30, 1985

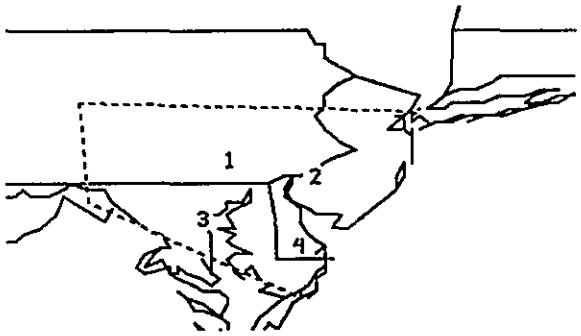


GOES 12 Midnight CST July 30, 1985

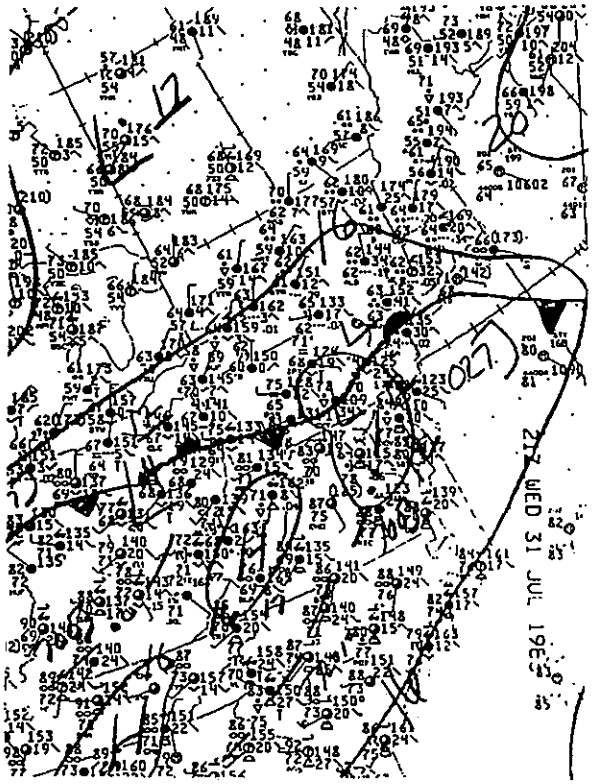


Composite 6PM CST July 31, 1985

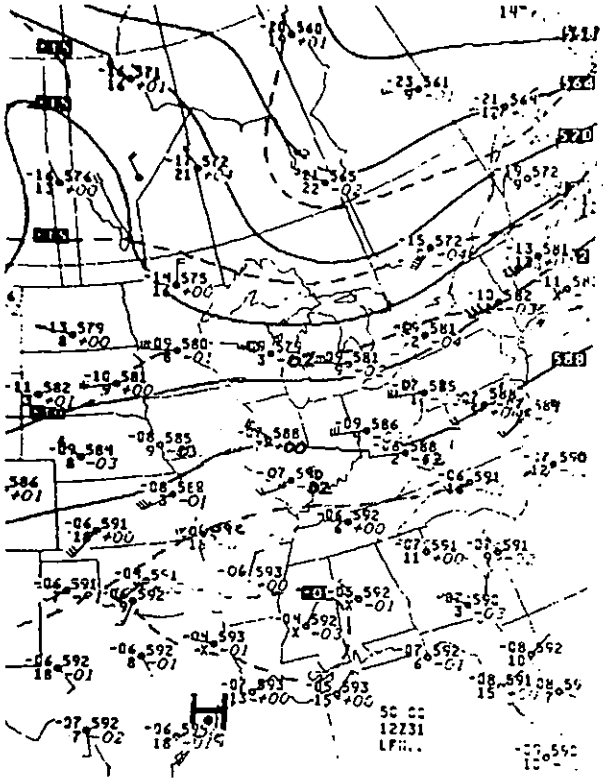
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1405	TORNADO-F2	PA	MANHEIM	3	2	5	
2	1610	TORNADO-F1	PA	PHILADELPHIA	2	1	3	
3	1630	GUST	MD	PASADENA			5	
4	1630	GUST	DE	ELLENDALE		2	4	



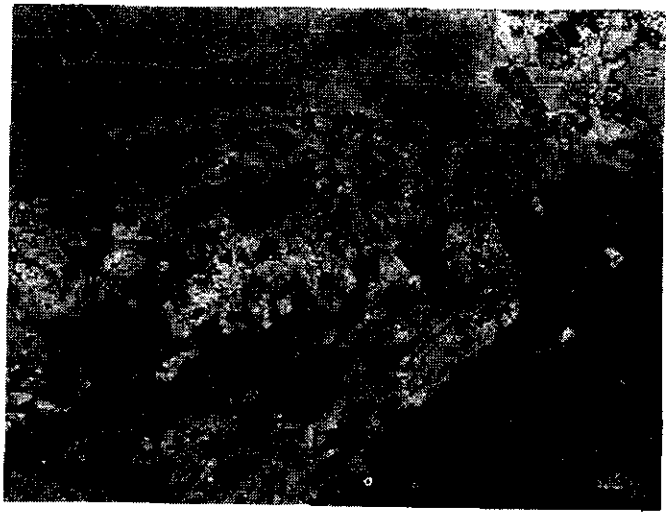
31JUL85 1025-1630 CST 10 REPORTS 3 TORNADOES



Surface 3PM CST July 31, 1985



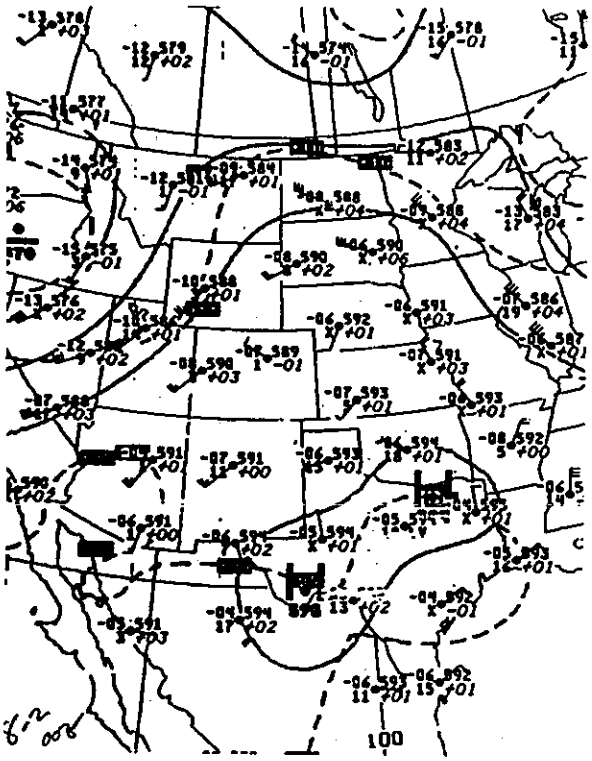
500 MB 6PM CST July 31, 1985



GOES 2:31PM CST July 31, 1985

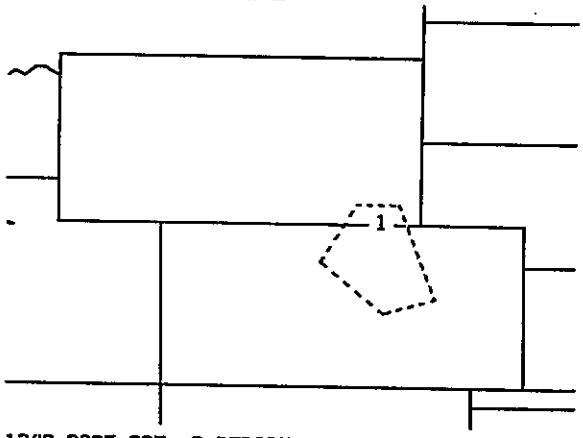
INSUFFICIENT DATA

Composite 6PM CST August 1, 1985

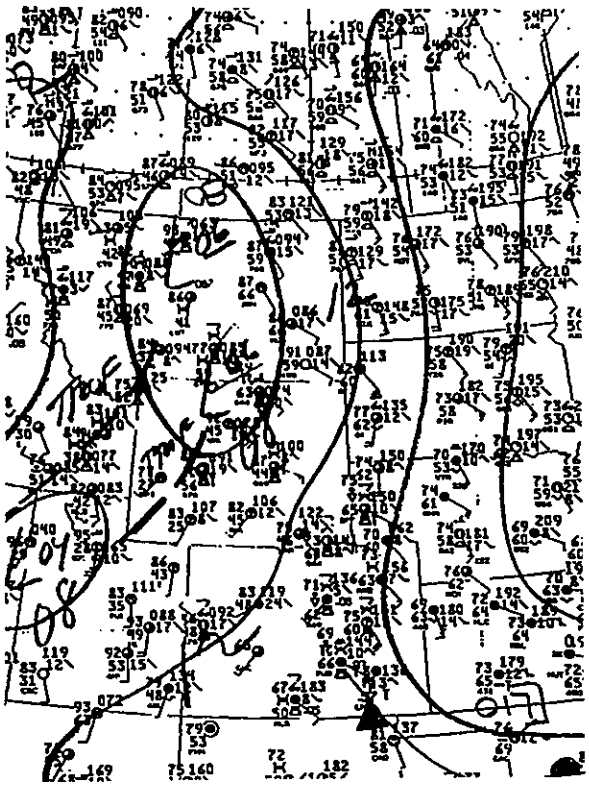


500 MB 6PM CST August 1, 1985

NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1800	2.00 INCH HAIL	WY	CHEYENNE				
	1800	GUST	WY	CHEYENNE				

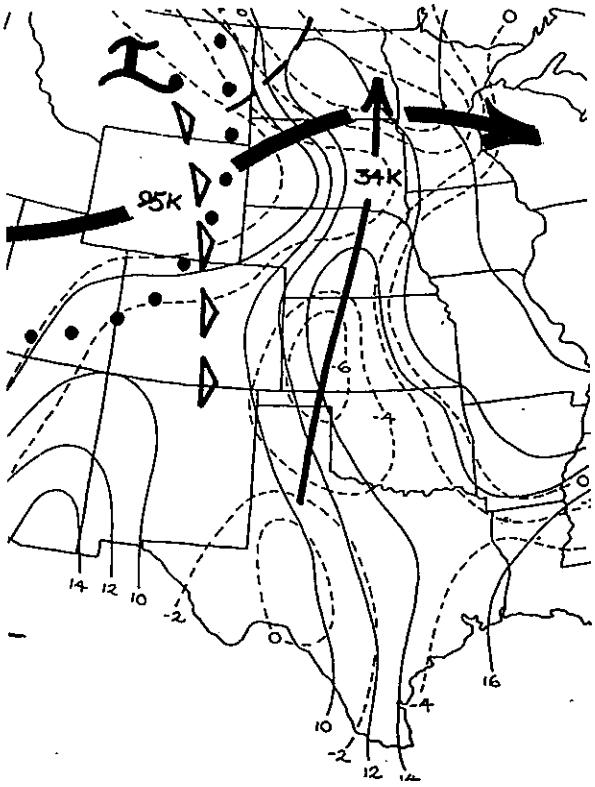


01AUG85 1340-2025 CST 8 REPORTS FLOODING IN CHEYENNE



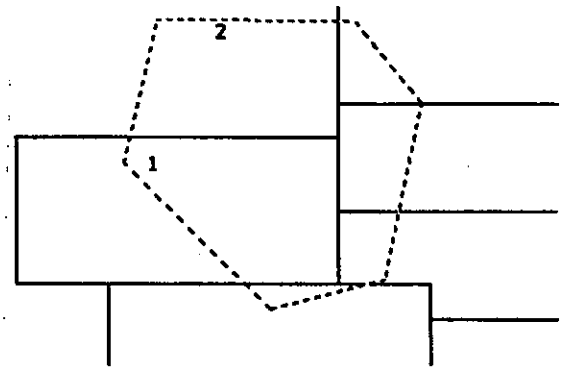
Surface 6PM CST August 1, 1985

GOES 5PM CST August 1, 1985

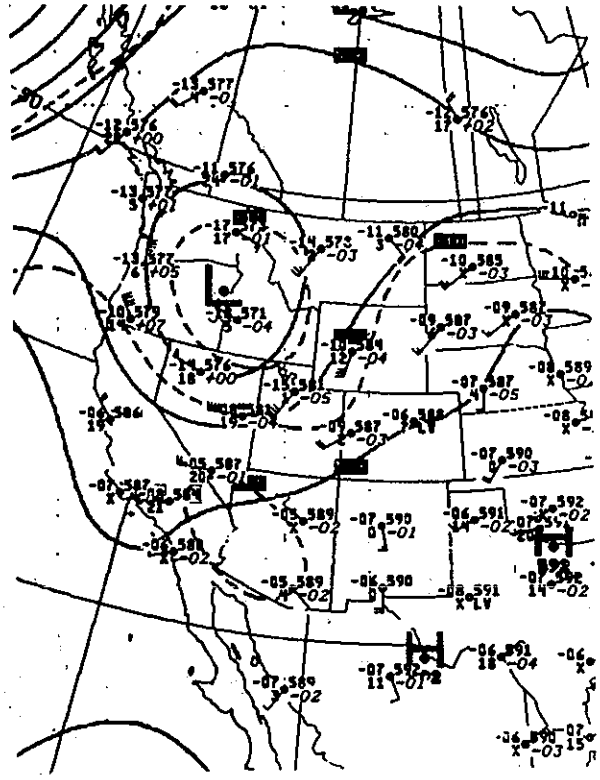


Composite 6PM CST August 2, 1985

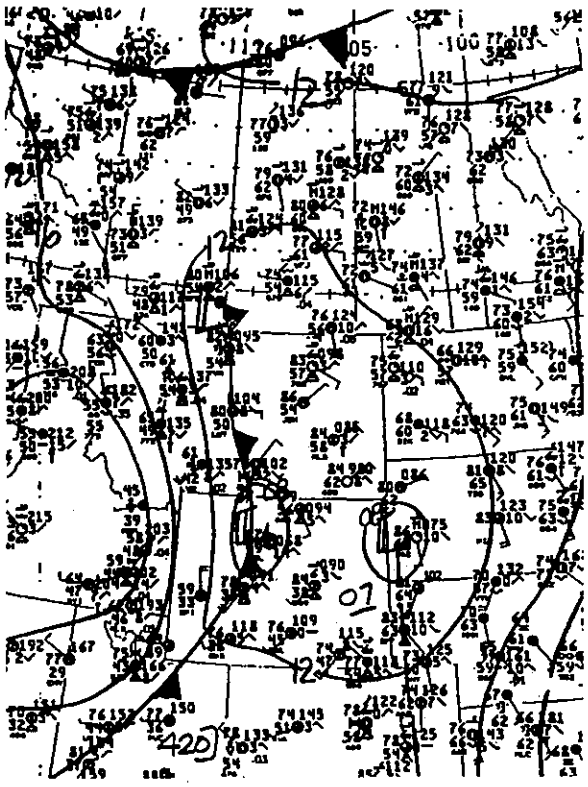
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1330	TORNADO-F3	WY	BIG HORN COUNTY				
2		GUST	MT	GLASGOW				6



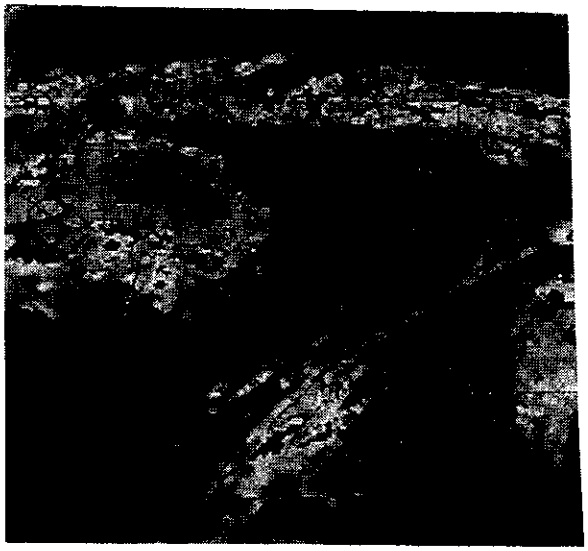
02AU685 1500-2150 CST 12 REPORTS



500 MB 6AM CST August 2, 1985

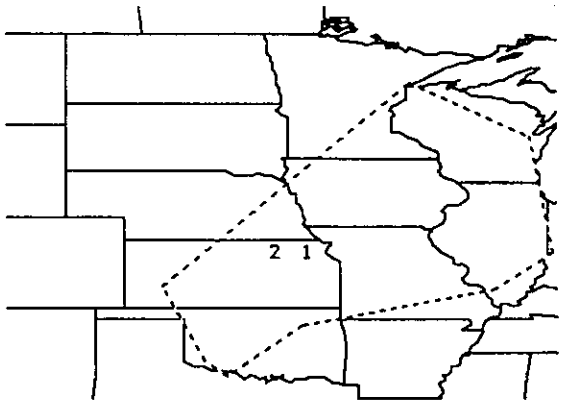


Surface 12 Noon CST August 2, 1985

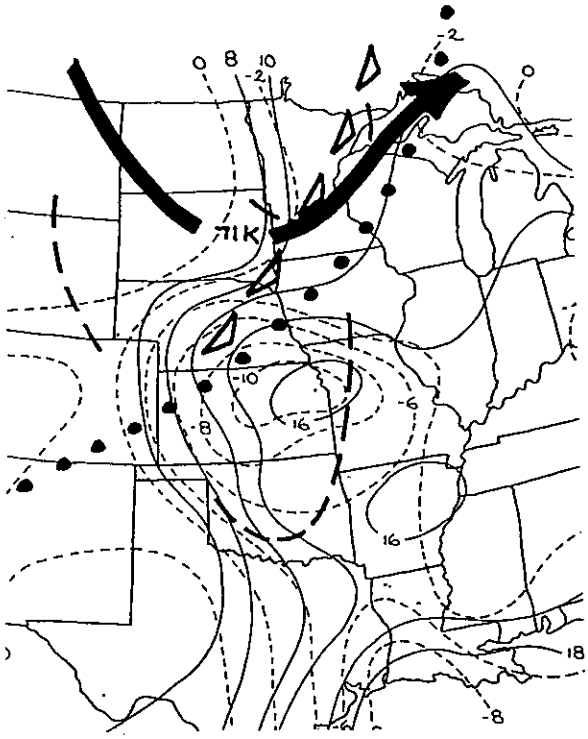


GOES 1:01PM CST August 2, 1985

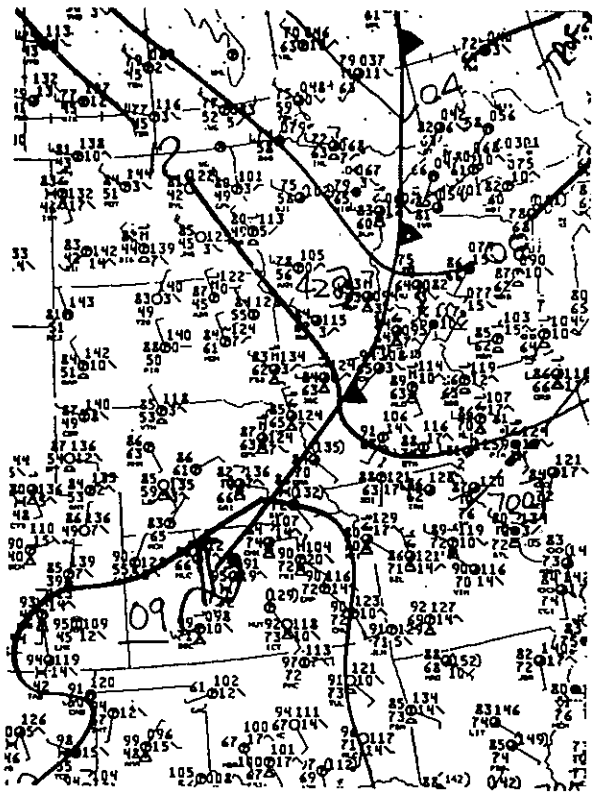
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1715	GUST 75 MPH	KS	BERWICK			1	5
2	1735	2.75 INCH HAIL	KS	HANOVER				7



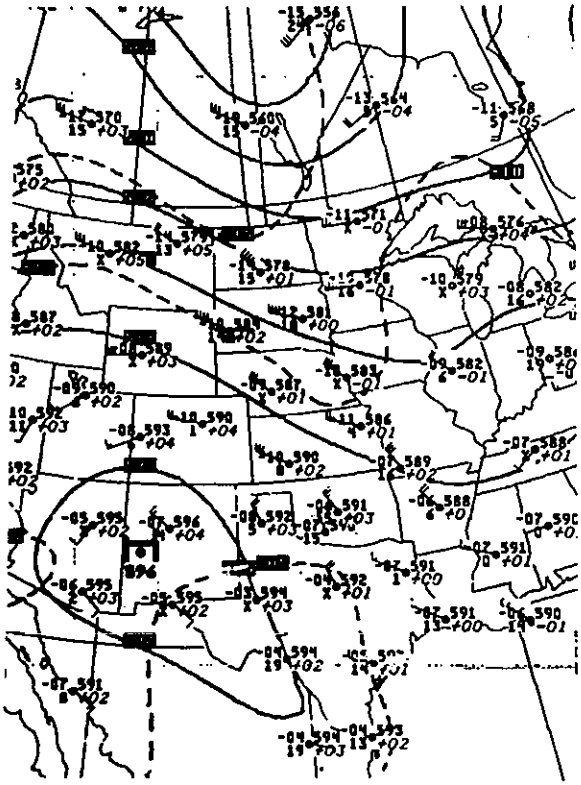
06AU685-07AU685 1315-0155 CST 65 REPORTS 1 TORNADO



Composite 6PM CST August 6, 1985

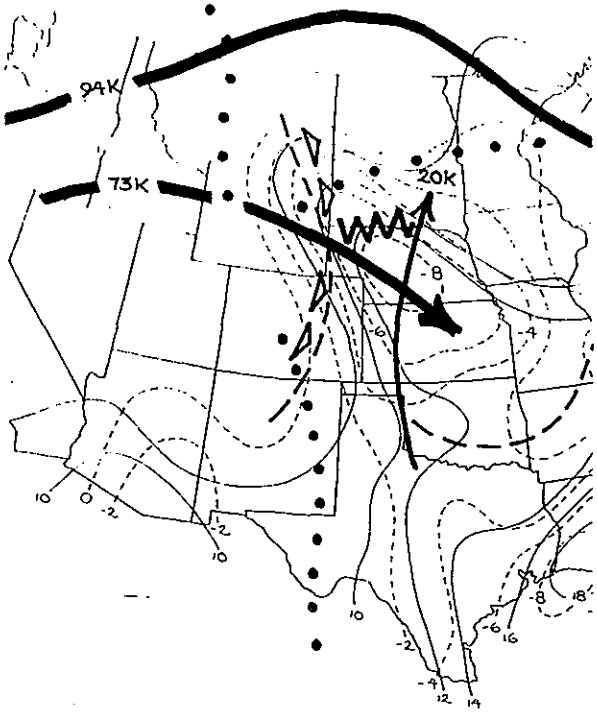


Surface 3PM CST August 6, 1985

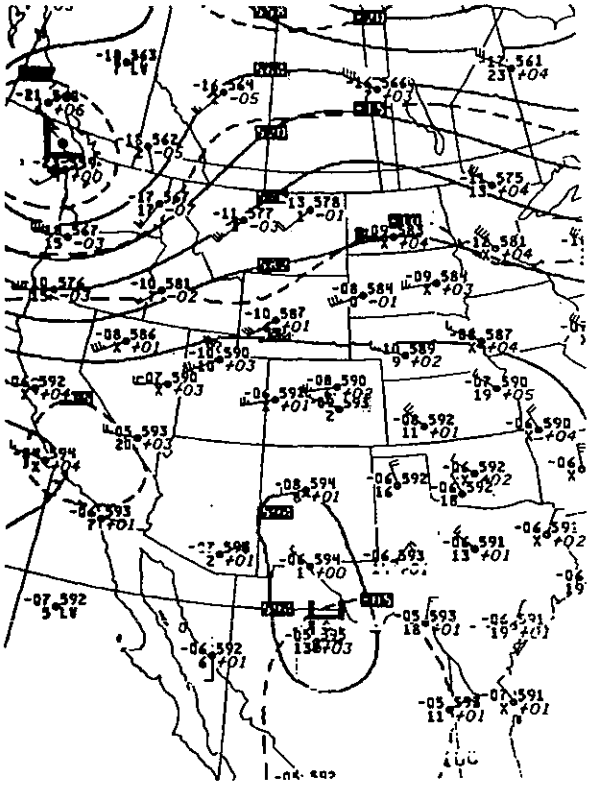


500 MB 6PM CST August 6, 1985

GOES 6PM August 6, 1985

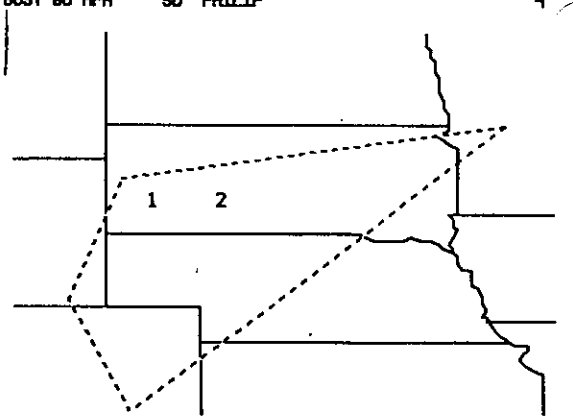


Composite 6PM CST August 7, 1985

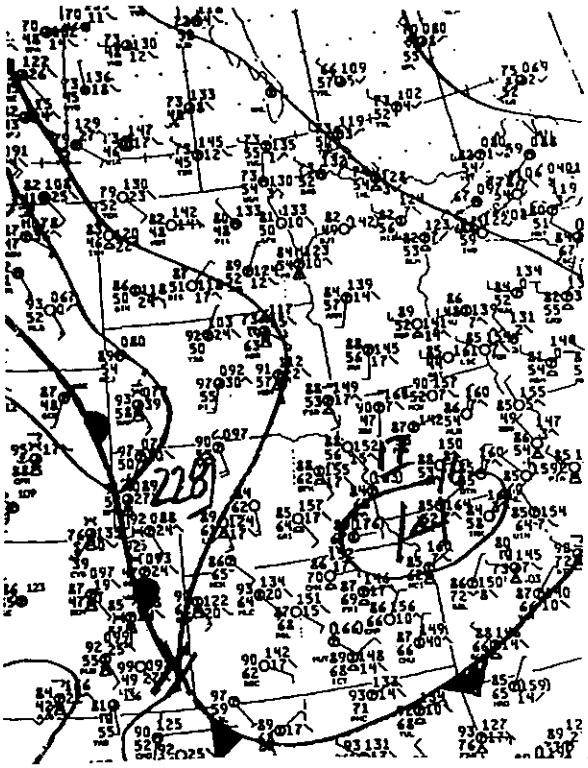


500 MB 6PM CST August 7, 1985

NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1601	2.00 INCH HAIL	SD	RAPID CITY				
2	1920	GUST 80 MPH	SD	PHILIP				



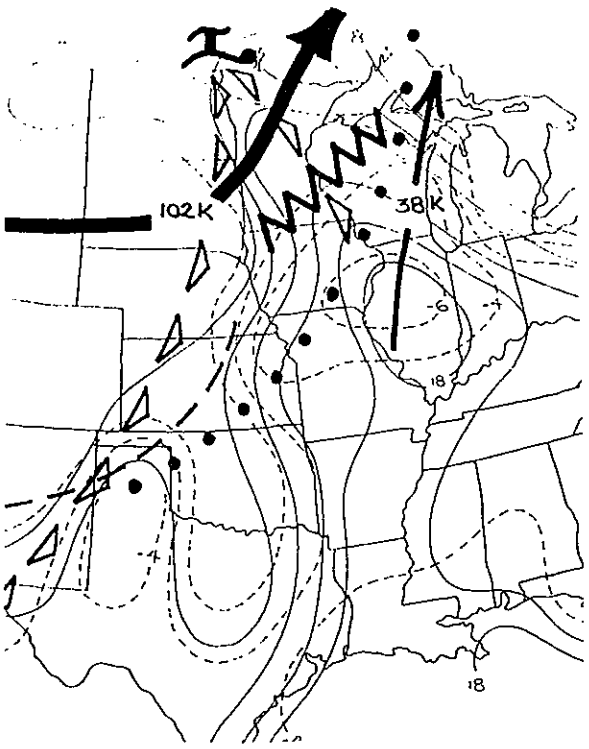
D7AUG85 1335-2007 CST 21 REPORTS 1 TORNADO



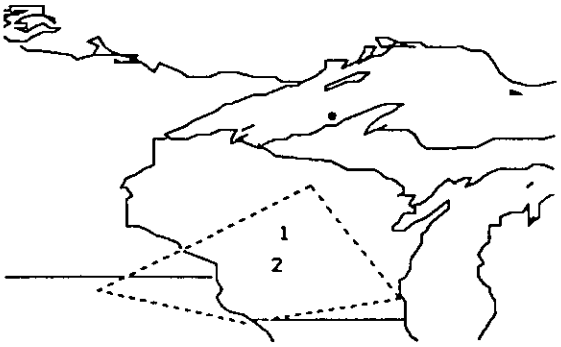
Surface 3PM CST August 7, 1985

GOES 5PM CST August 7, 1985

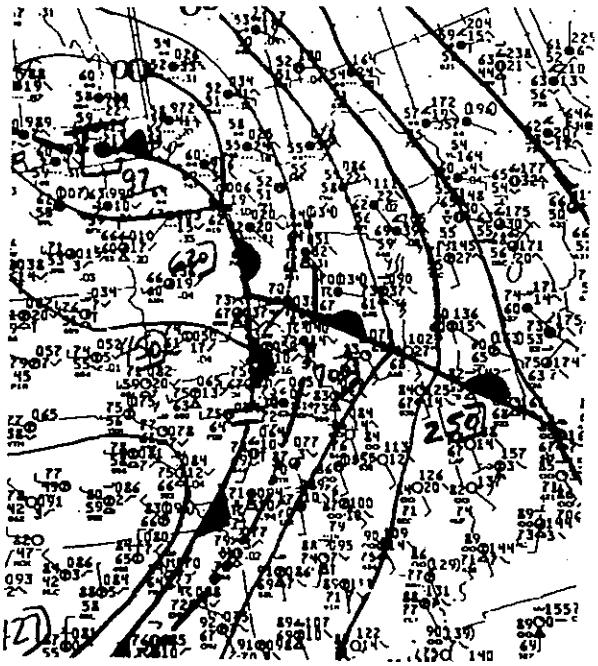
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1813	TORNADO-F2	WI	AUBURNDALE	10		14	7
2	1835	TORNADO-F2	WI	NEW LISBON	22	2	22	6



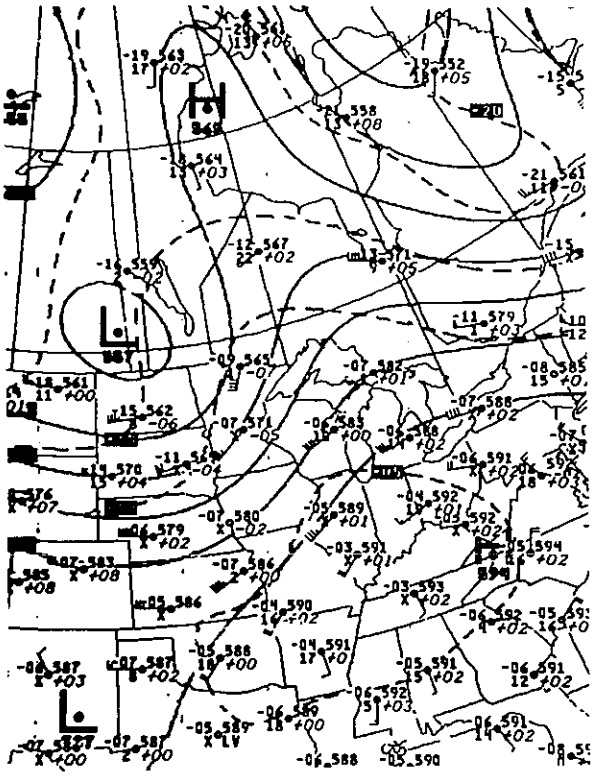
Composite 6PM CST August 12, 1985



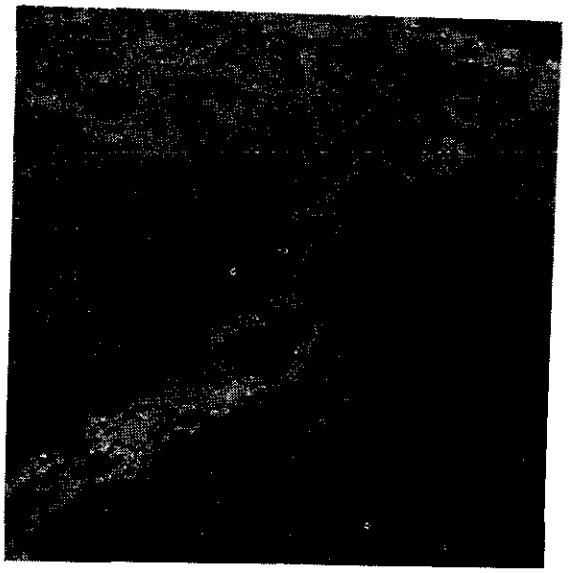
12AU685 1635-2245 CST 24 REPORTS 4 TORNADOES



Surface 6PM CST August 12, 1985



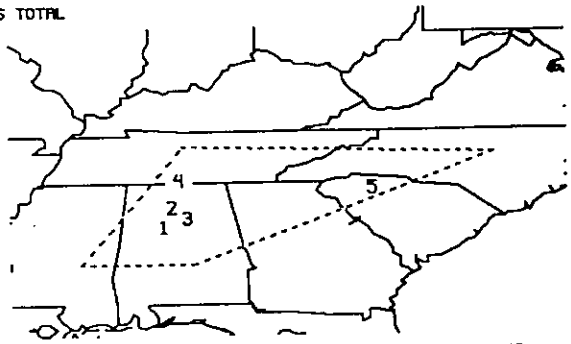
500 MB 6PM CST August 12, 1985



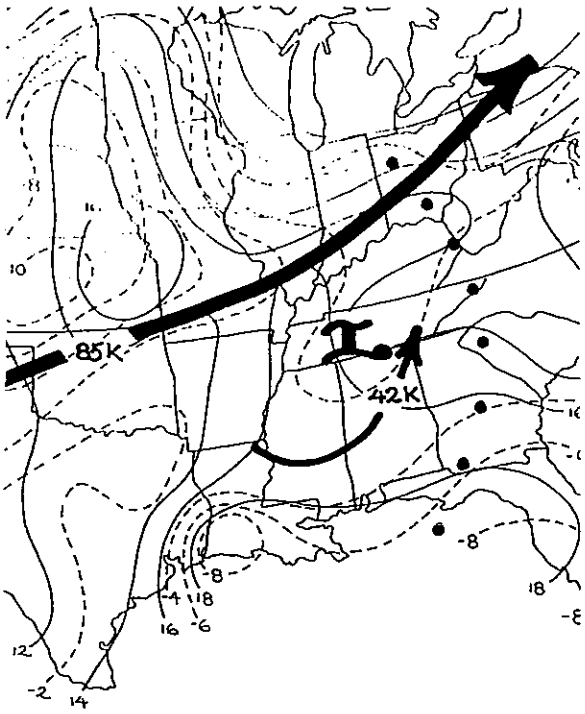
GOES 6PM CST August 12, 1985

NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1000	TORNADO-F1	AL	PARRISH	1	1	1	6
2	1140	TORNADO-F3	AL	DANVILLE	45		2	6
3	1315	TORNADO-F3	AL	BERLIN	34		6	6
4	1400	TORNADO-F3	TN	PULASKI	12		1	5
5	1050	TORNADO-F2	SC	VALLEY FALLS	9		39	6

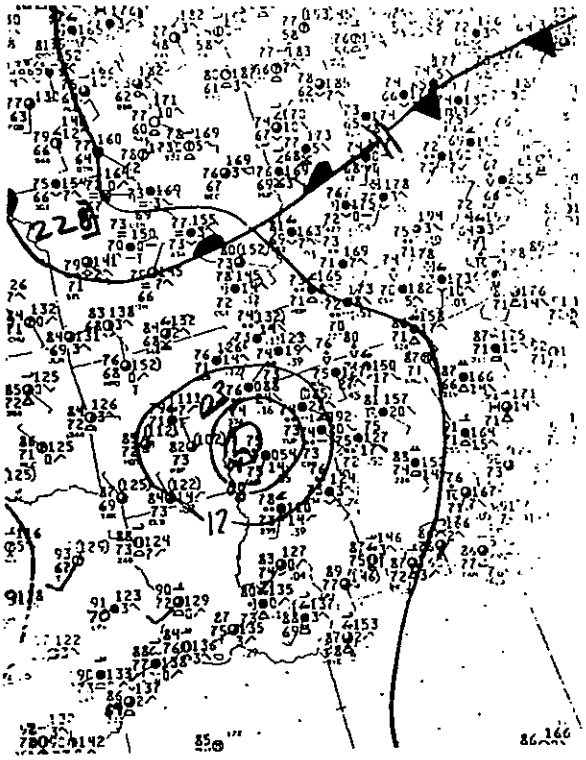
63 INJURIES TOTAL



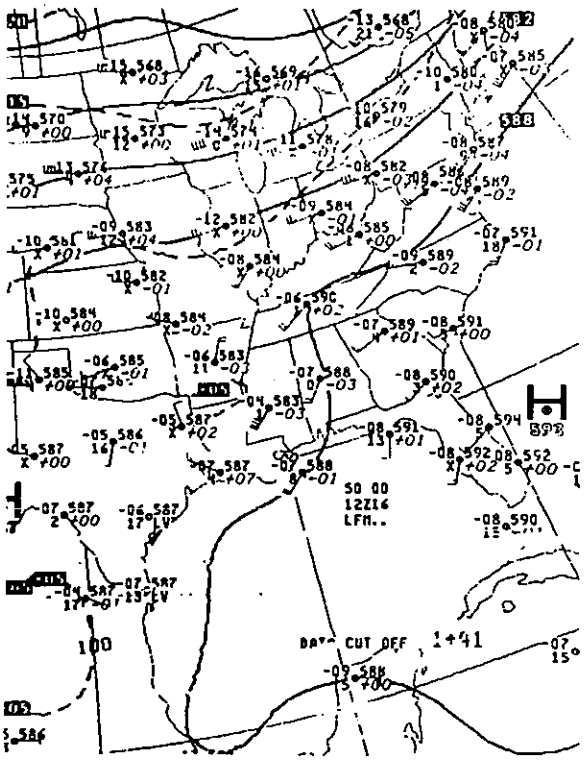
TROPICAL STORM DANNY 16AUG86-17AUG86 36 TORNADOES



Composite 6PM CST August 16, 1985

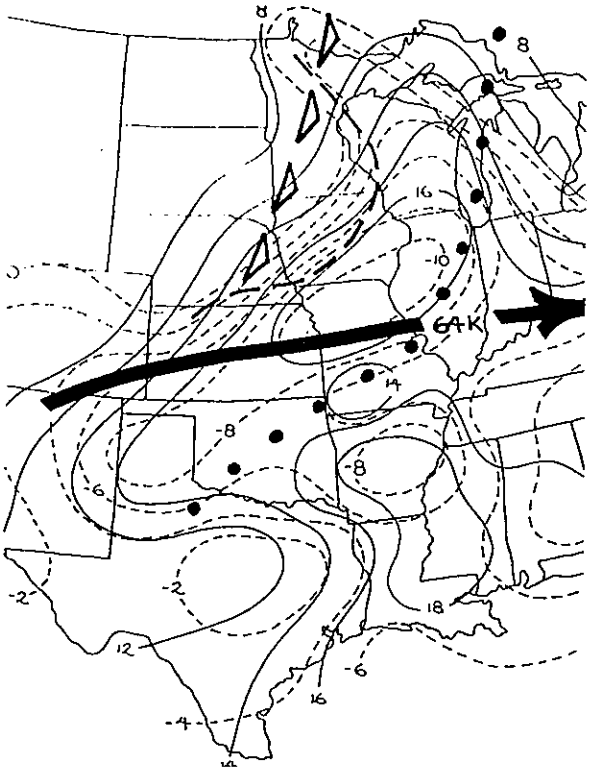


Surface 12 Noon August 16, 1985



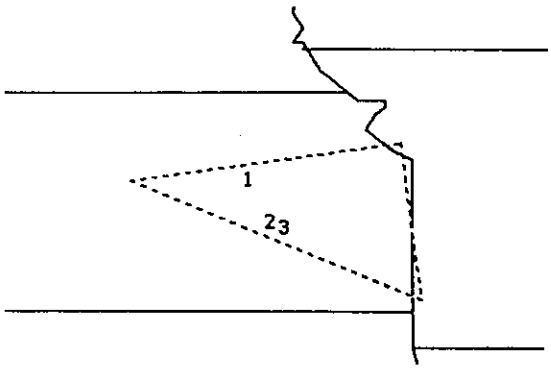
500 MB 6AM CST August 16, 1985

GOES 2PM CST August 16, 1985

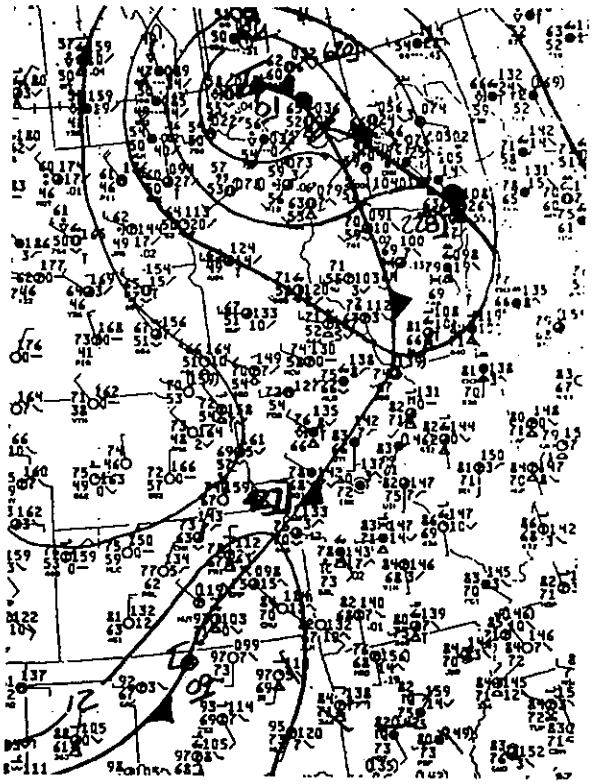


Composite 6PM CST August 17, 1985

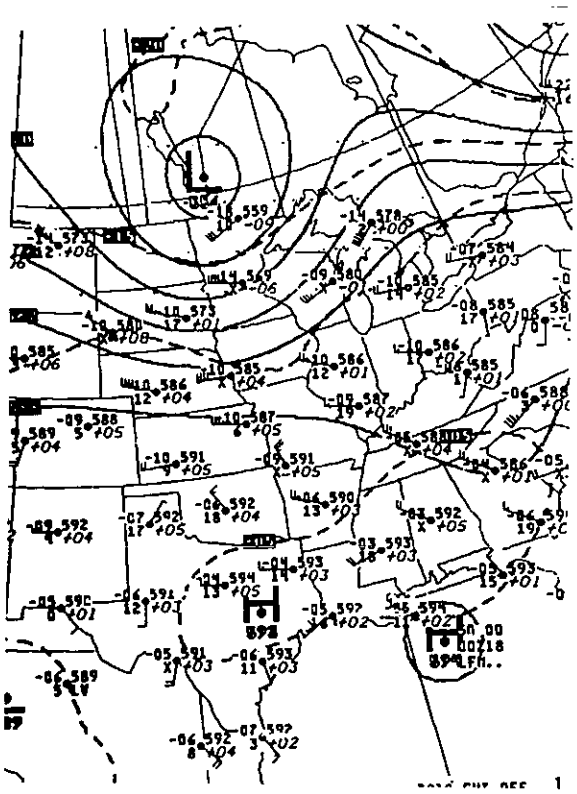
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1718	TORNADO-F3	KS	6 SE ALTA VISTA	2			5
2	1830	GUST 80 MPH	KS	3 W EMPORIA		1	5	
3	1845	GUST 100 MPH	KS	OLPE			1	



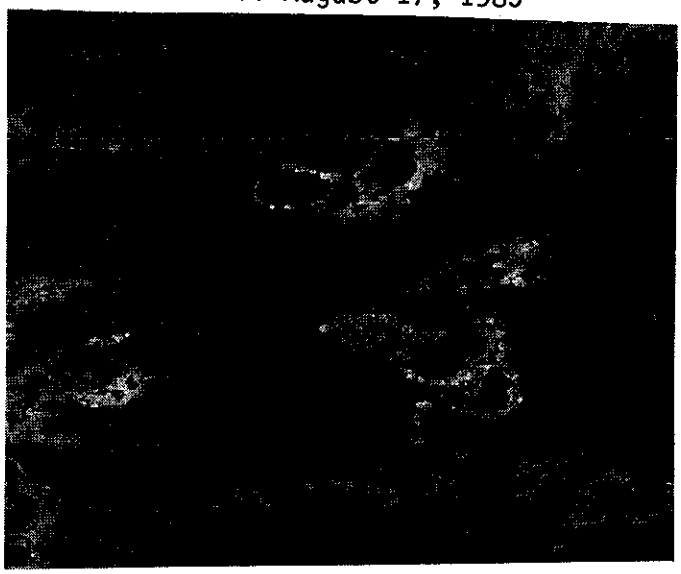
17AUG85 1718-2330 CST 13 REPORTS 3 TORNADOES



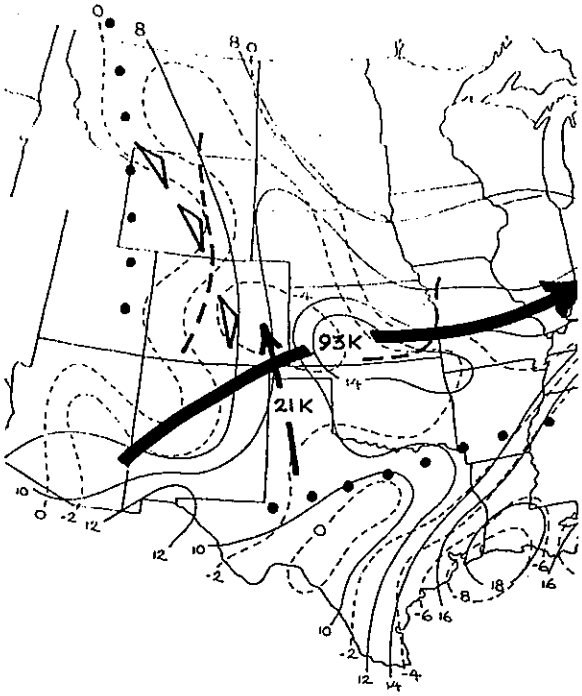
Surface 6PM CST August 17, 1985



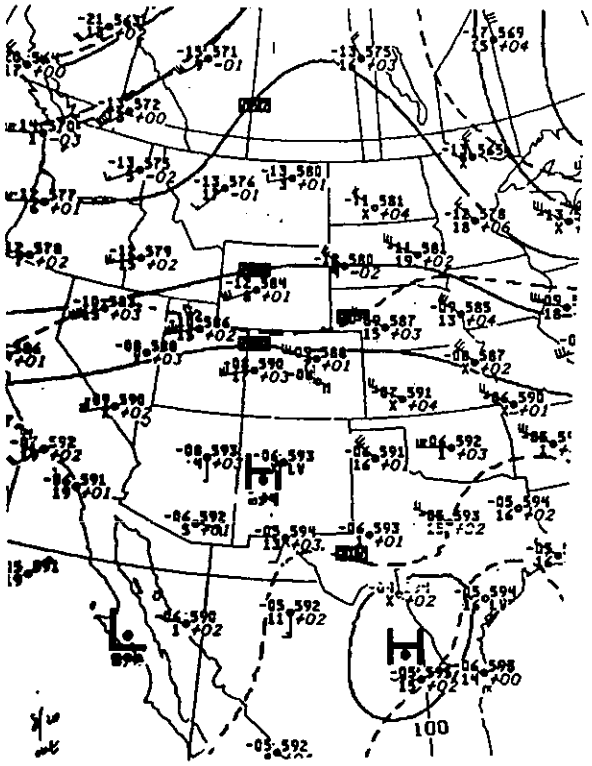
500 MB 6PM CST August 17, 1985



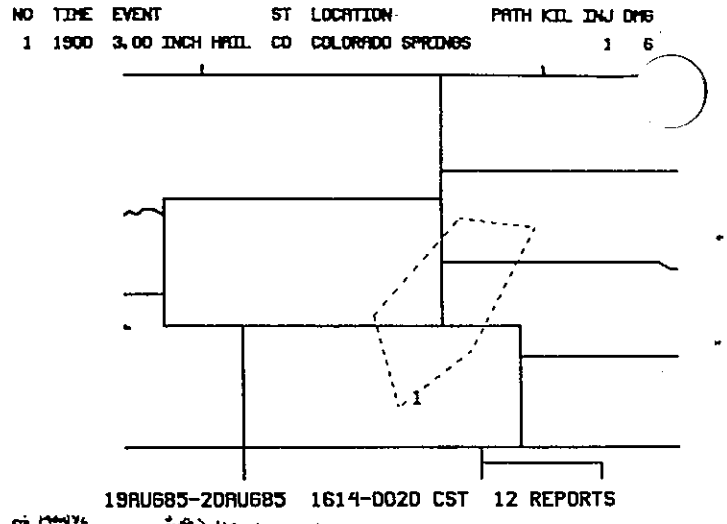
GOES 6PM CST August 17, 1985

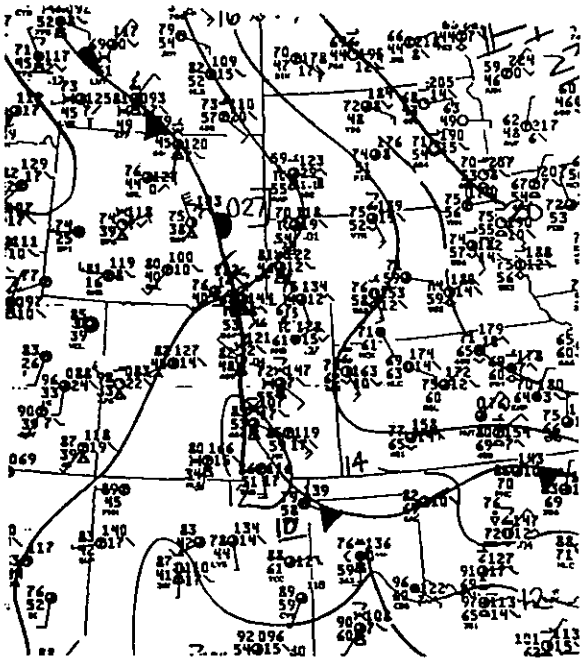


Composite 6PM CST August 19, 1985

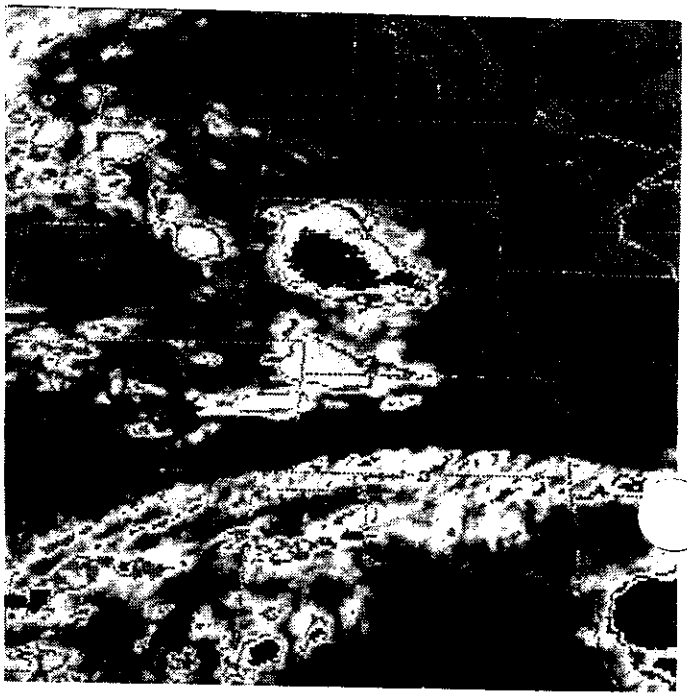


500 MB 6PM CST August 19,1985

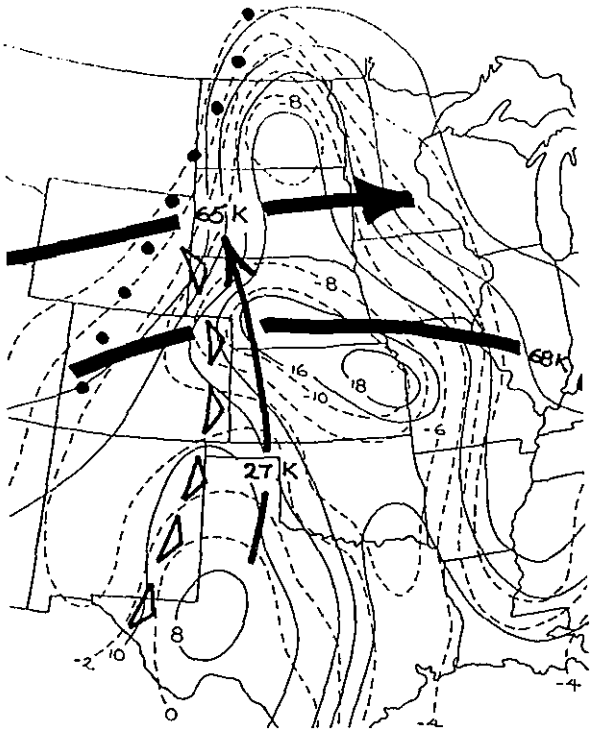




Surface 6PM CST August 19,1985

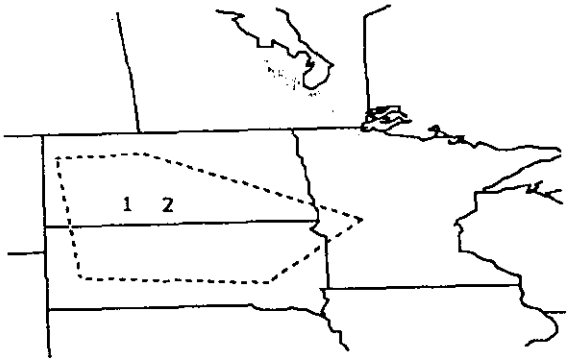


GOES 7:01PM CST August 19, 1985

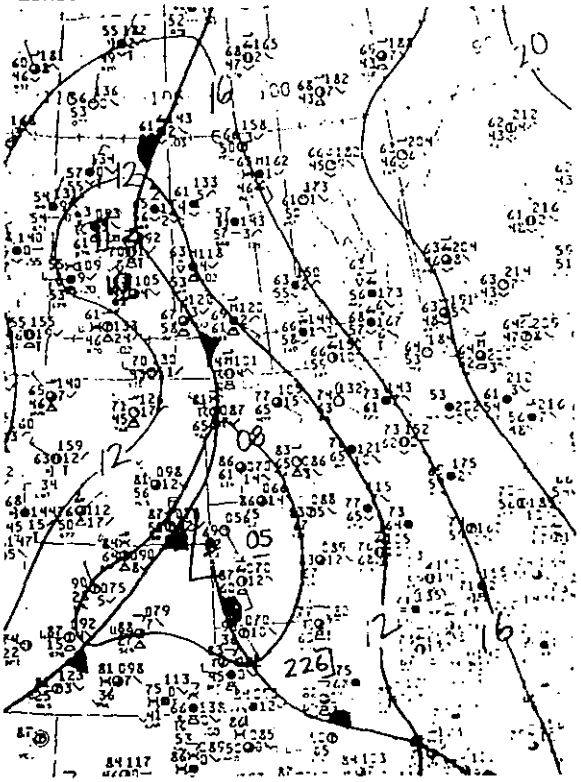


Composite 6PM CST August 21, 1985

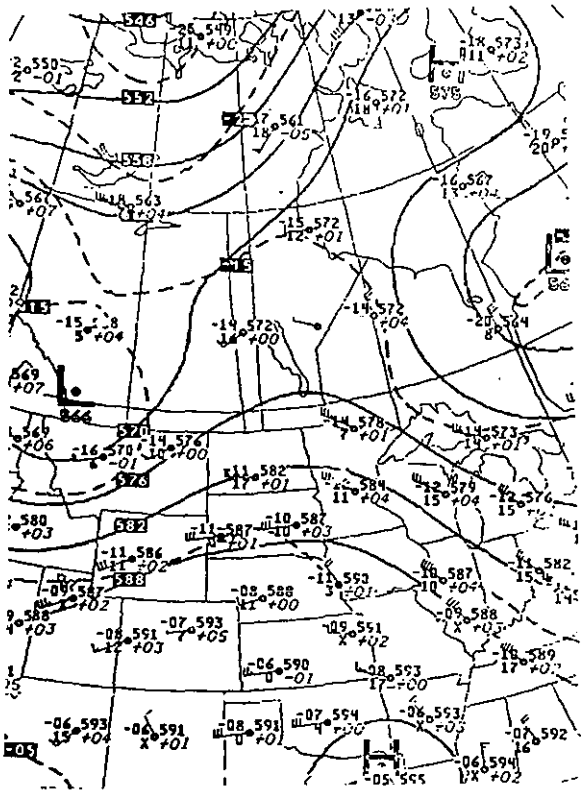
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1952	GUST 70 MPH	ND	GLEN ULLIN			2	5
2	2121	GUST 70 MPH	ND	BISMARCK				5



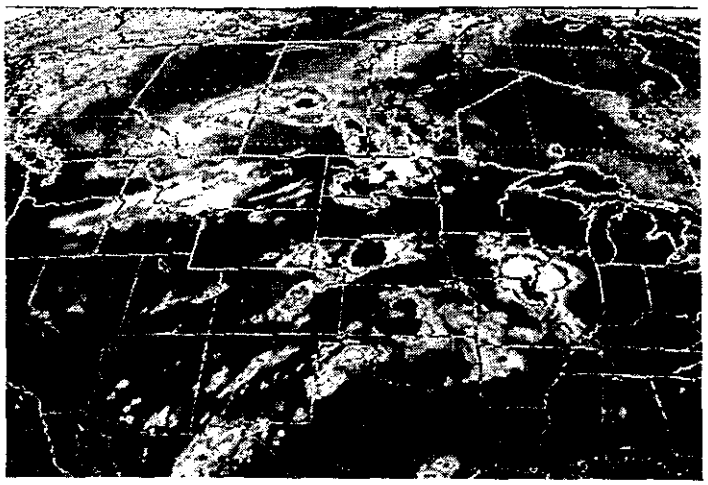
21AUG85-22AUG85 0620-0230 CST 20 REPORTS



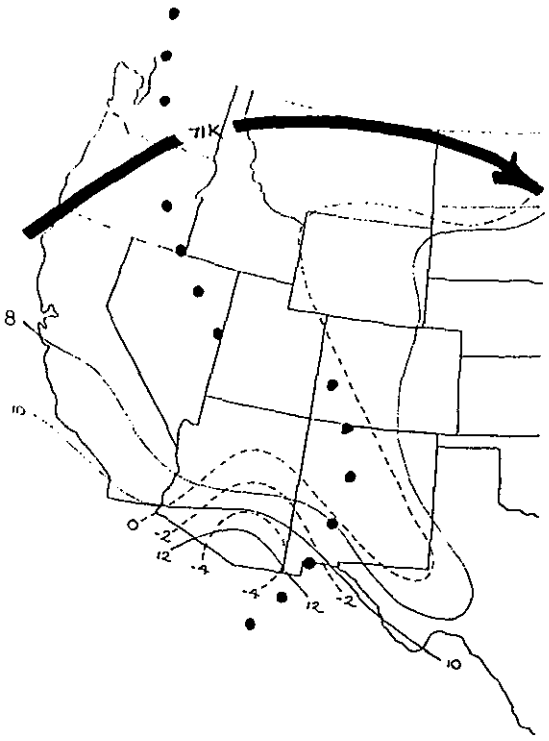
Surface 6PM CST August 21, 1985



500 MB 6PM CST August 21, 1985

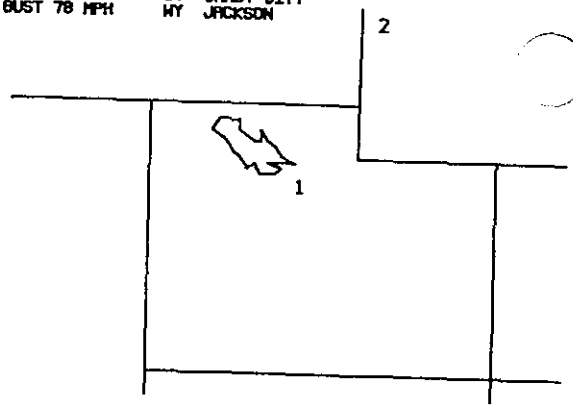


GOES 8 PM CST August 21, 1985

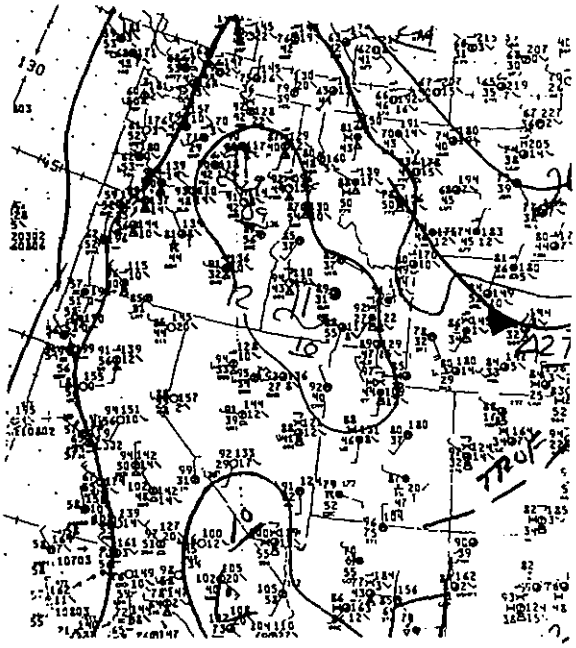


Composite 6PM CST August 26, 1985

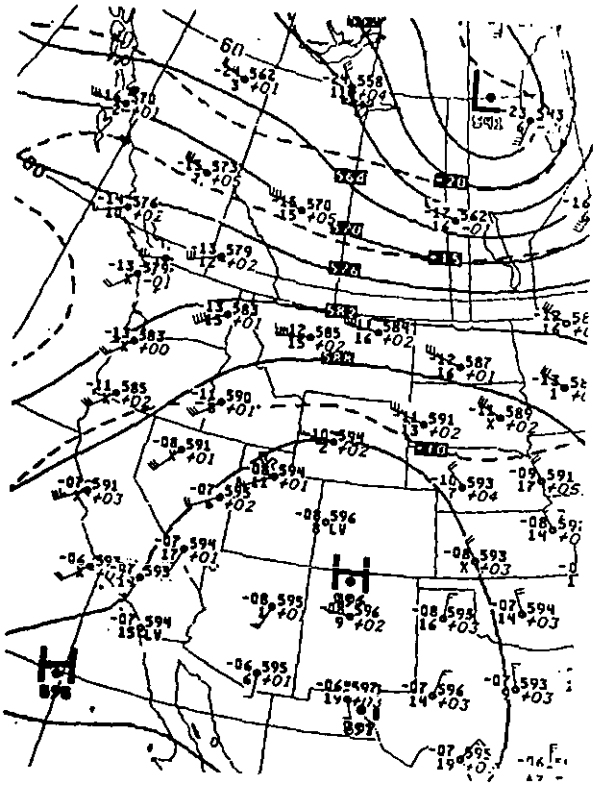
NO	TIME	EVENT	ST	LOCATION
1	1905	GUST 91 MPH	UT	SANDY CITY
2	1910	GUST 78 MPH	WY	JACKSON



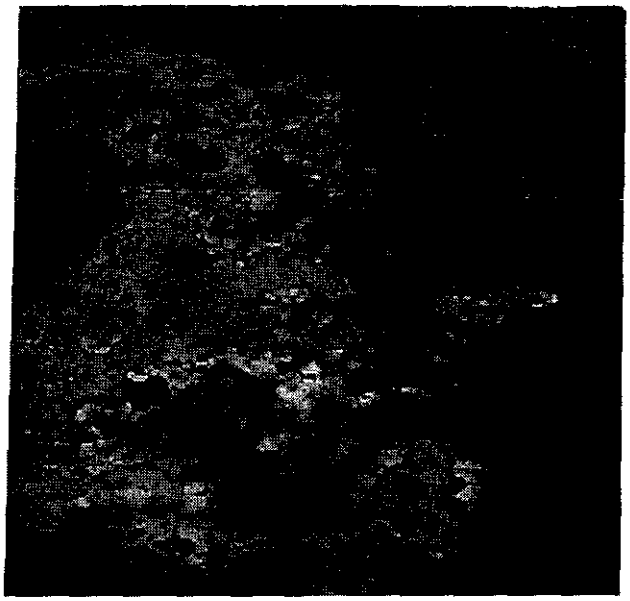
26AUG85 SEVERE THUNDERSTORMS IN THE CENTRAL PLATEAU



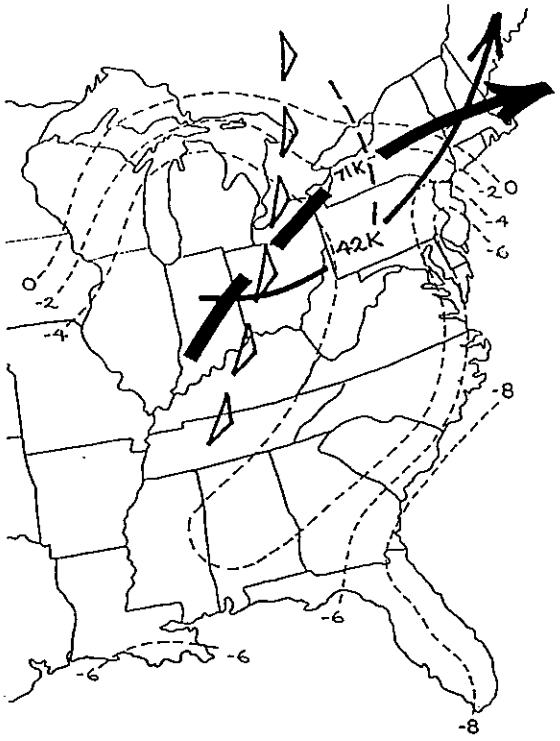
Surface 6PM CST August 26, 1985



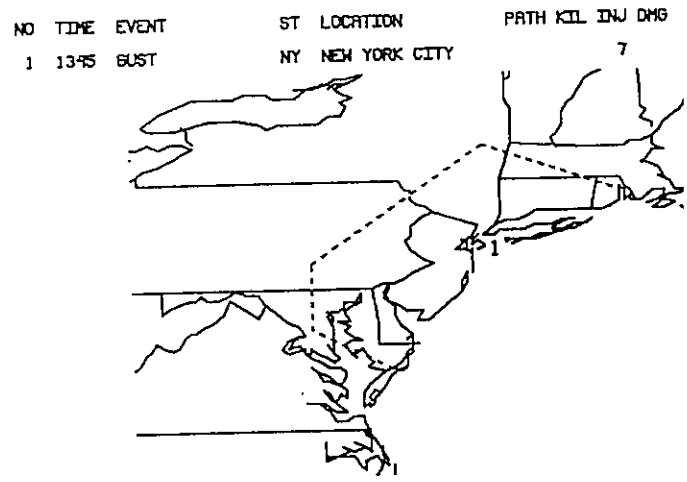
500 MB 6PM CST August 26, 1985



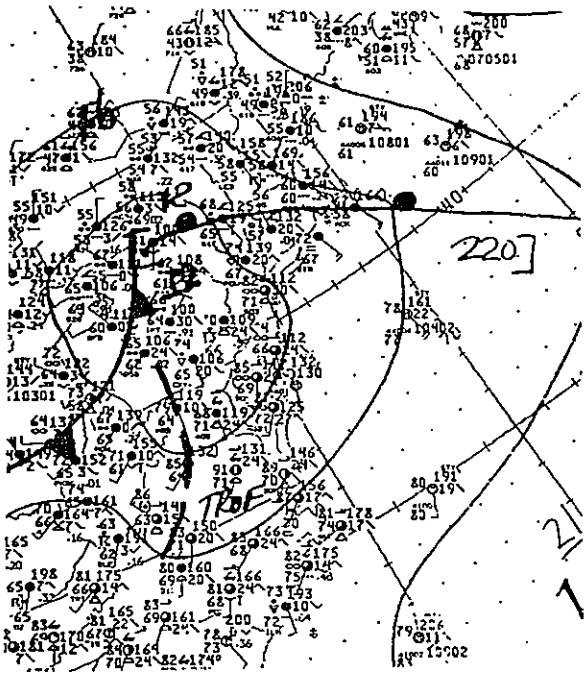
GOES 7:01PM CST August 26, 1985



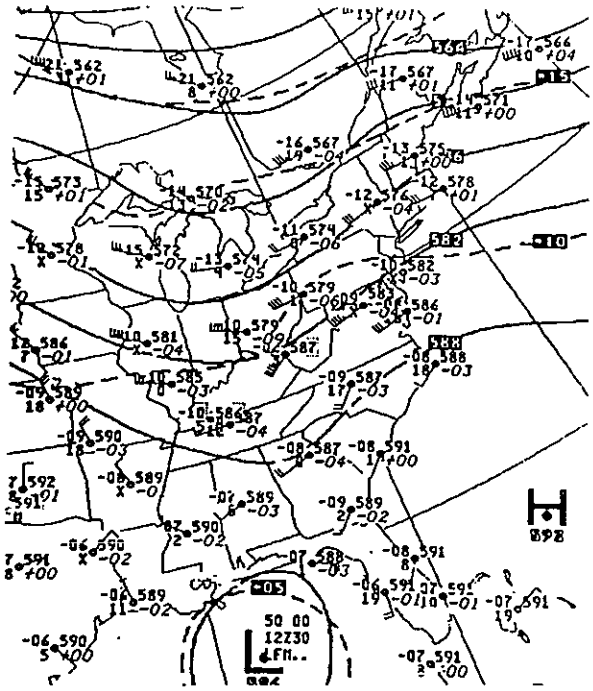
Composite 6AM CST August 30, 1985



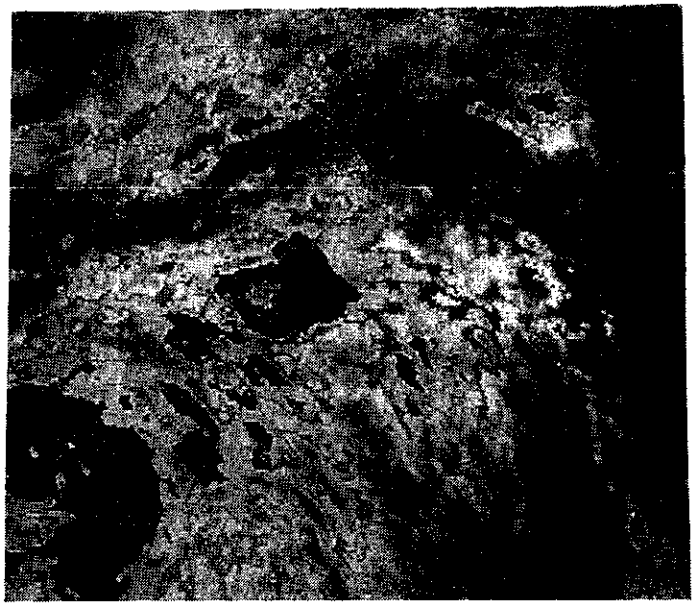
30AU685 1050-1500 CST 16 REPORTS



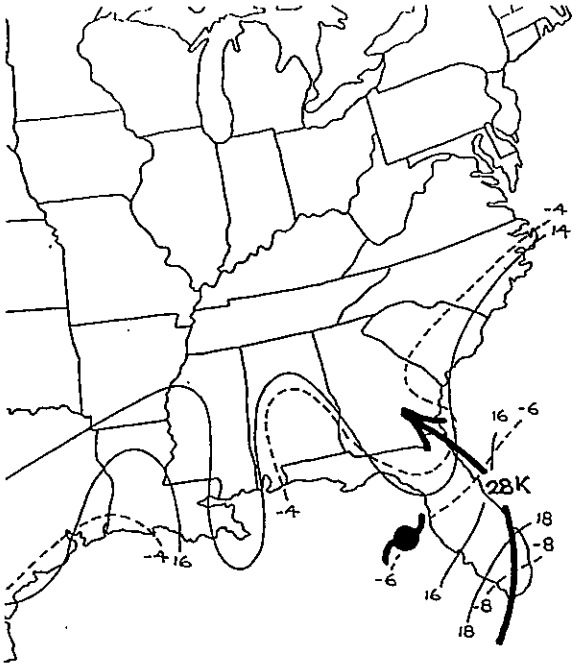
Surface 12Noon CST August 30, 1985



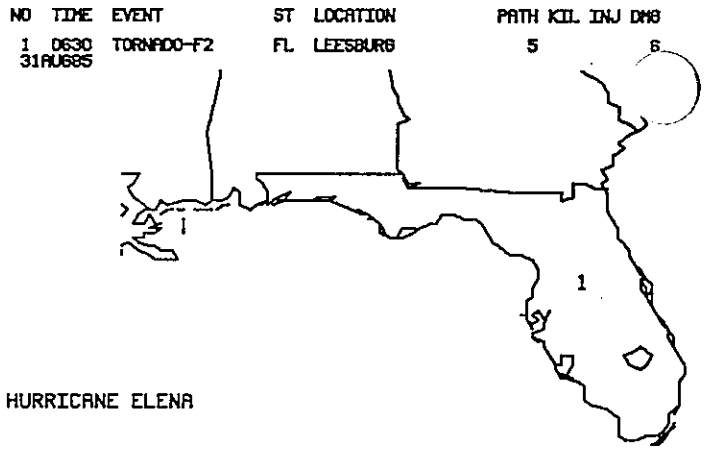
500 MB 6AM CST August 30, 1985



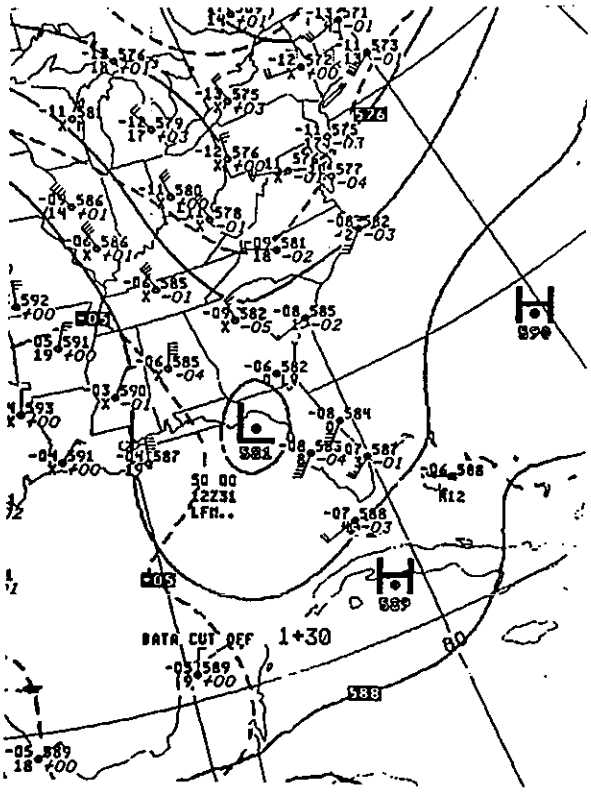
GOES 2:01 PM CST August 30, 1985



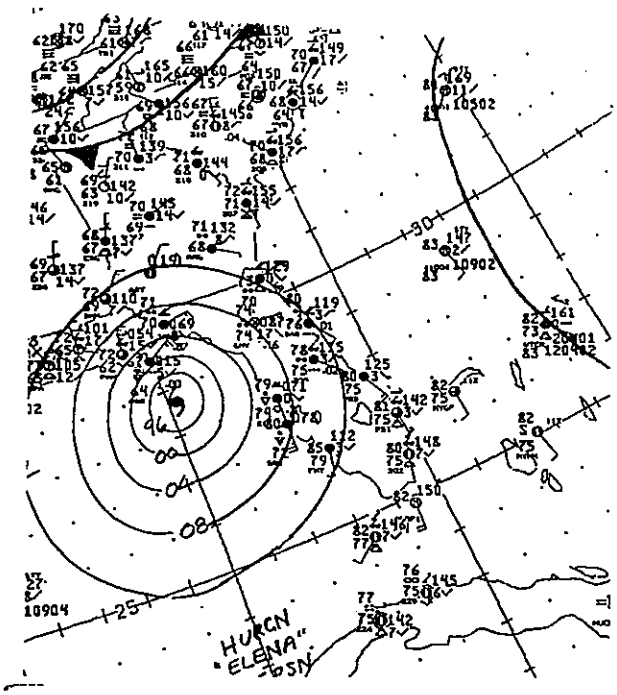
Composite 6AM CST August 31, 1985



0100 CST 31AU685 TO 0800 CST 02SEP85 9 TORNADOES

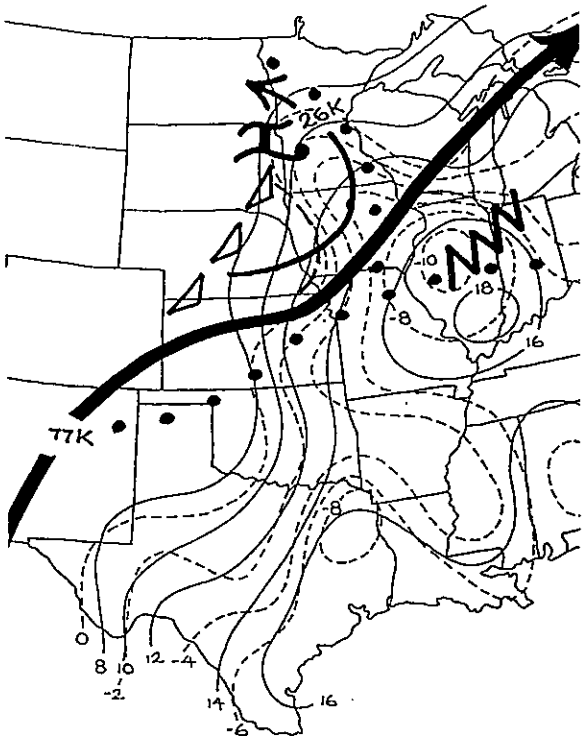


500 MB 6AM CST August 31, 1985

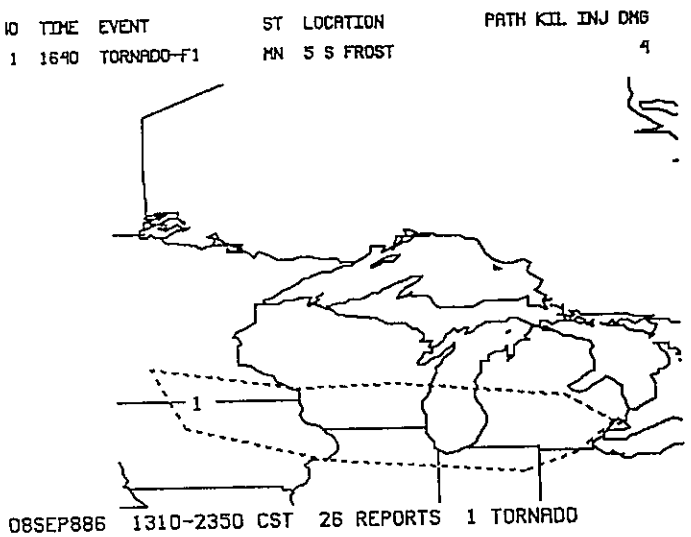


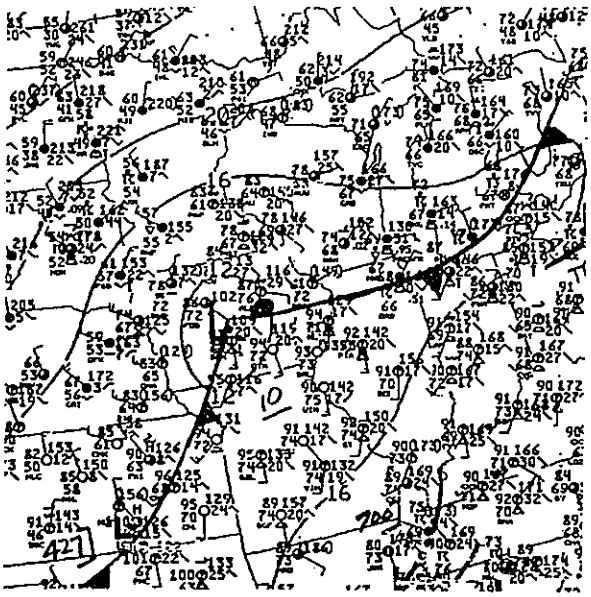
Surface 6AM CST August 31, 1985

GOES 6:01AM CST August 31, 1985

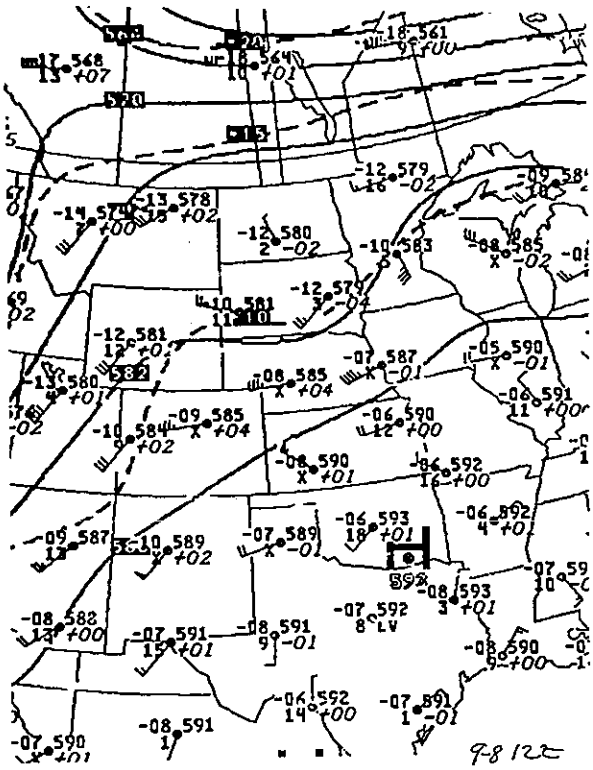


Composite 6PM CST September 8, 1985



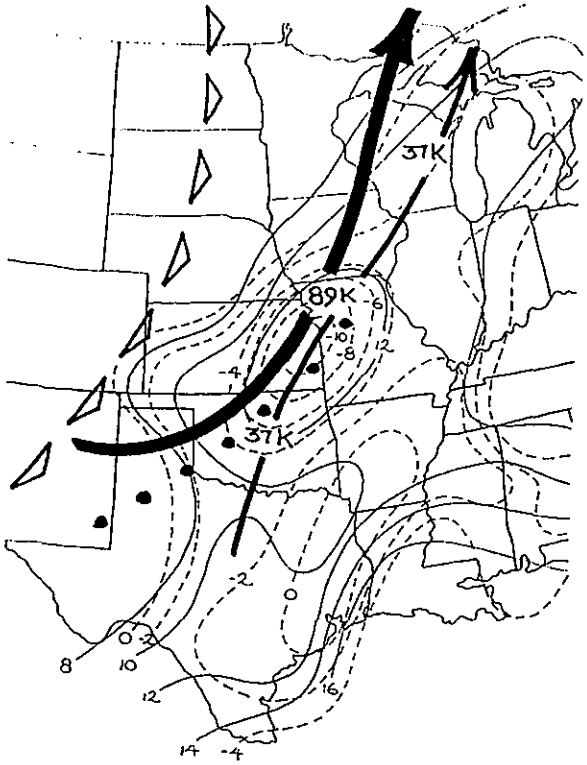


Surface 3PM CST September 8, 1985



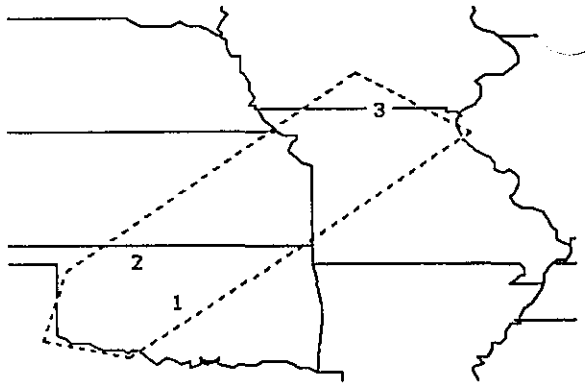
500 MB 6AM CST September 8, 1985

GOES 4:30PM CST September 8, 1985

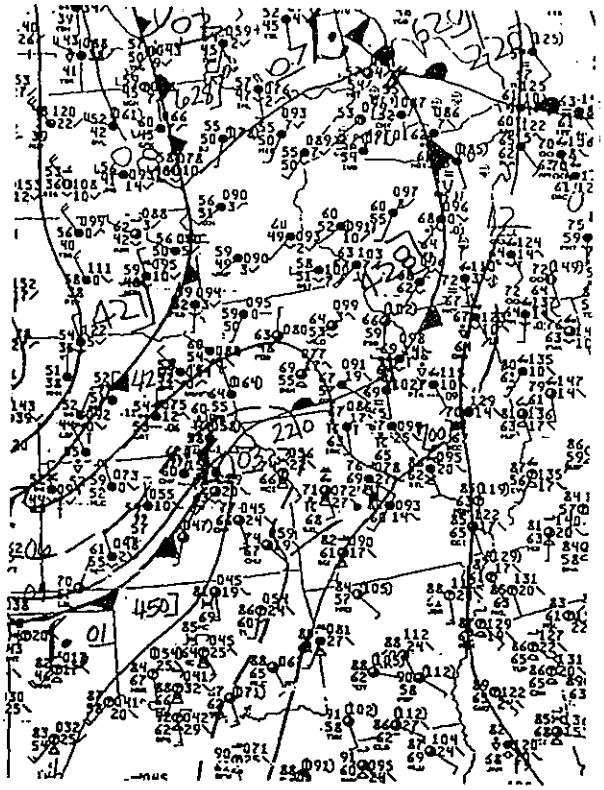


Composite 6PM CST September 22, 1985

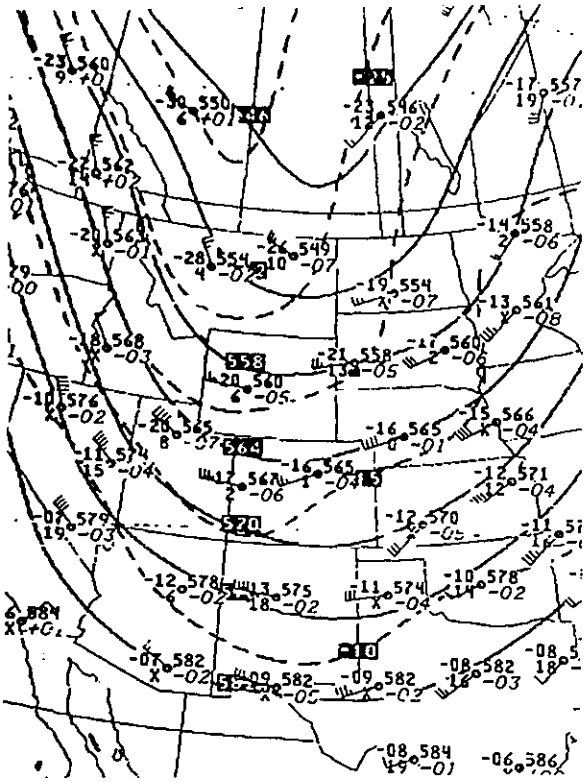
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1646	4.00 INCH HAIL	OK	EDMOND				
2	1715	TORNADO-F2	OK	CHEROKEE	3			5
3	2020	TORNADO-F2	IA	HUMESTON		1	6	



22SEP85 1330-2150 CST 53 REPORTS 4 TORNADOES

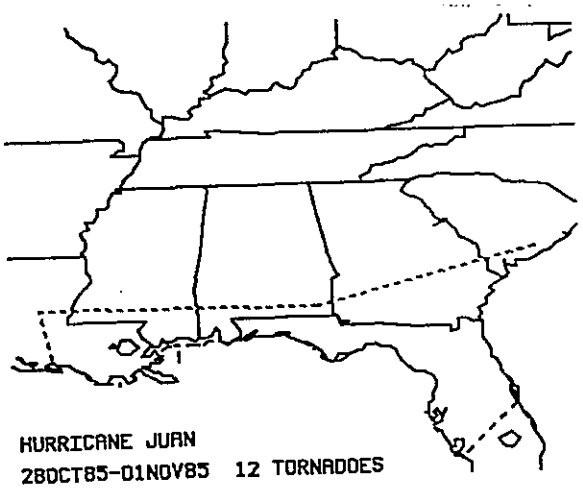


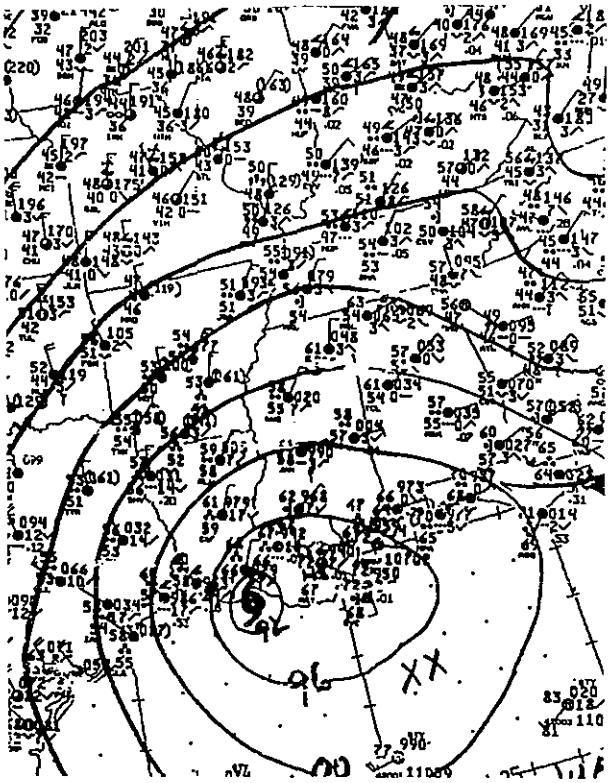
Surface 3PM CST September 22, 1985



500 MB 6AM CST September 22, 1985

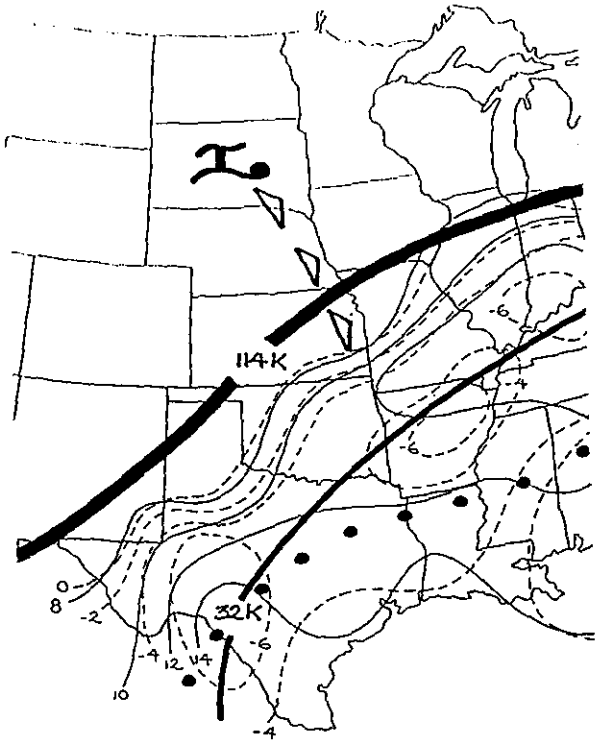
GOES 5PM CST September 22, 1985



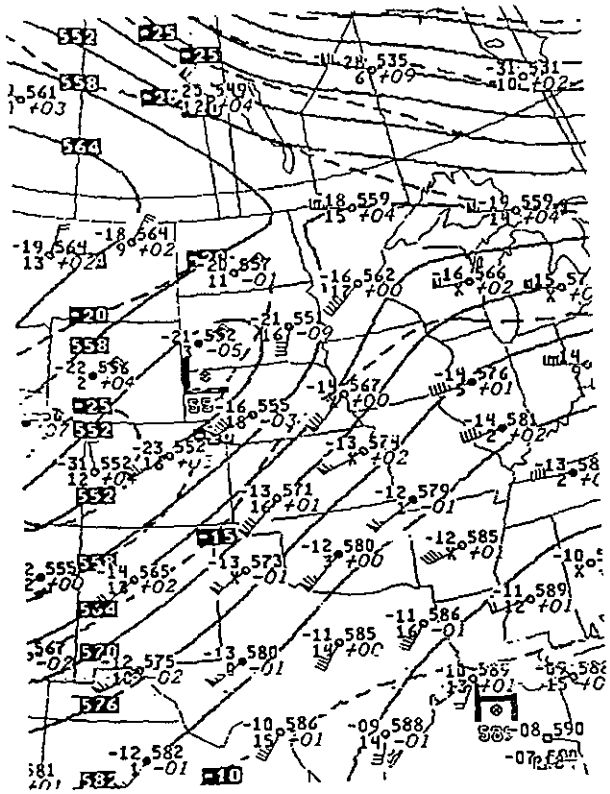


Surface 9AM CST October 30, 1985

GOES 9AM CST October 30, 1985

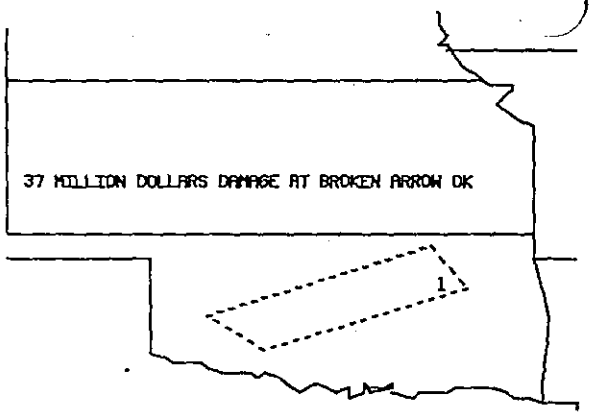


Composite 6PM CST November 13, 1985

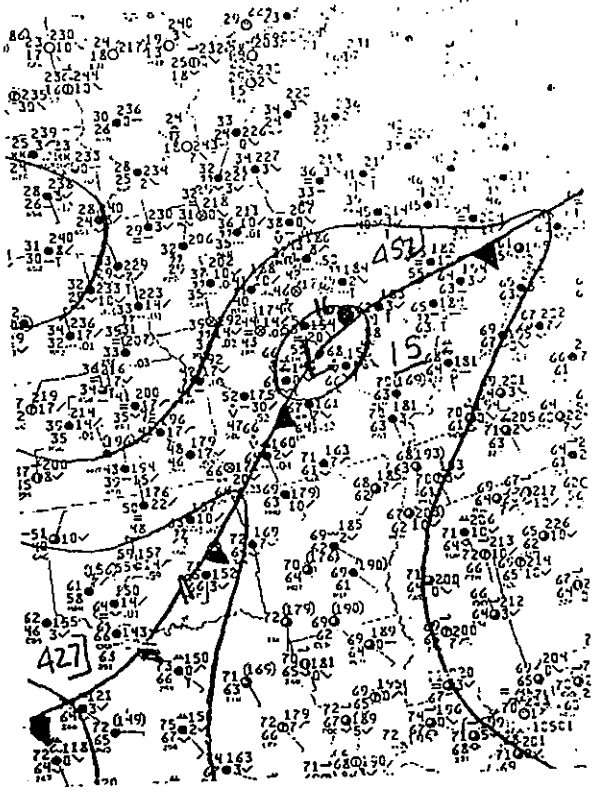


500 MB 6PM CST November 13, 1985

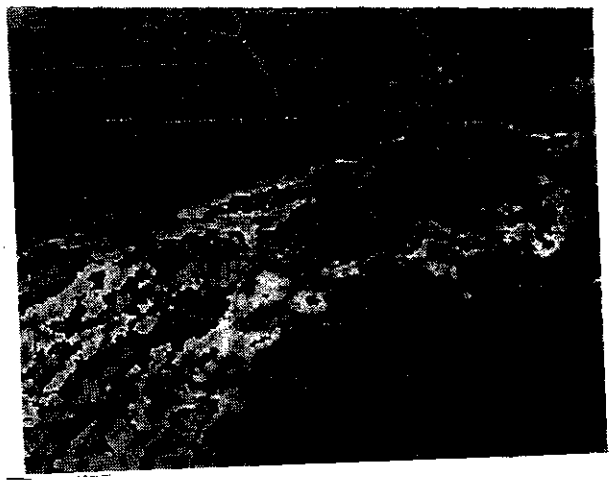
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1515	TORNADO-F1	OK	BROKEN ARROW				5



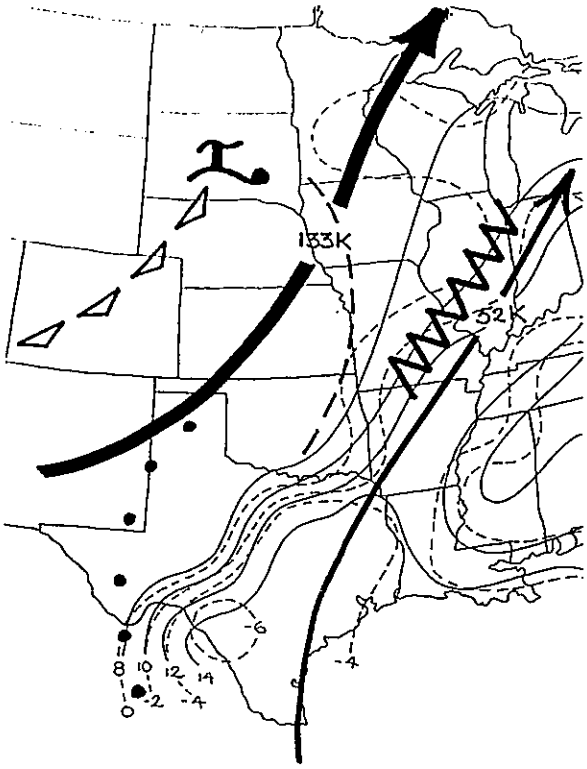
13NOV85 1100-2005 CST 16 REPORTS 1 TORNADO



Surface 6PM CST November 13, 1985



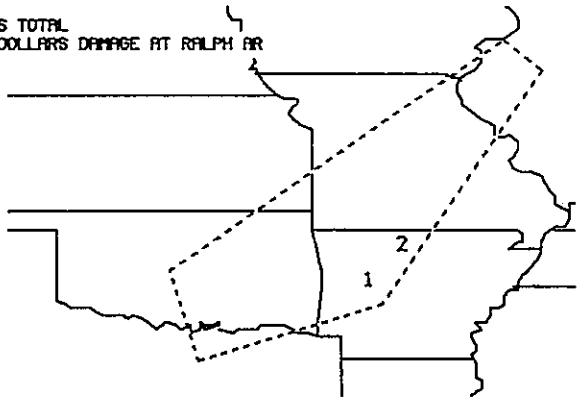
3 PM CST November 13, 1985



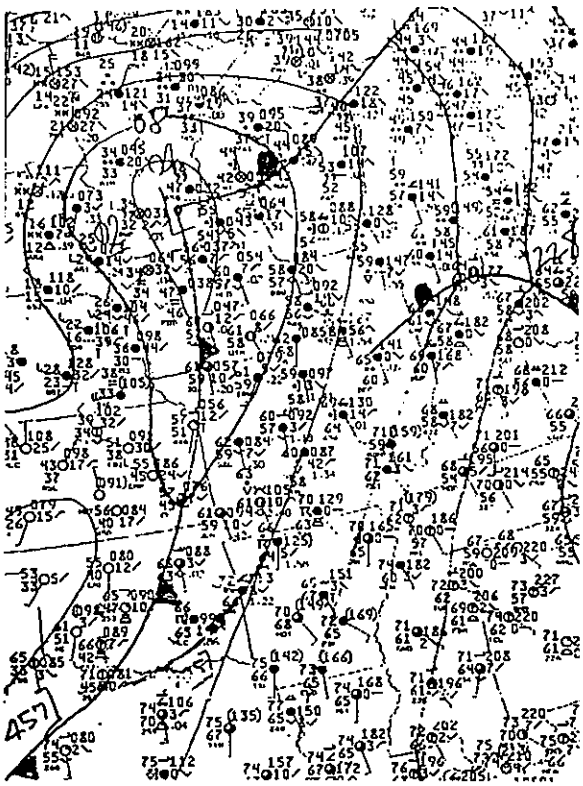
Composite 6PM CST November 18, 1985

NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1933	TORNADO-F2	AR	CLARKSVILLE	18			6
2	2112	TORNADO-F3	AR	RALPH	34	3	16	7

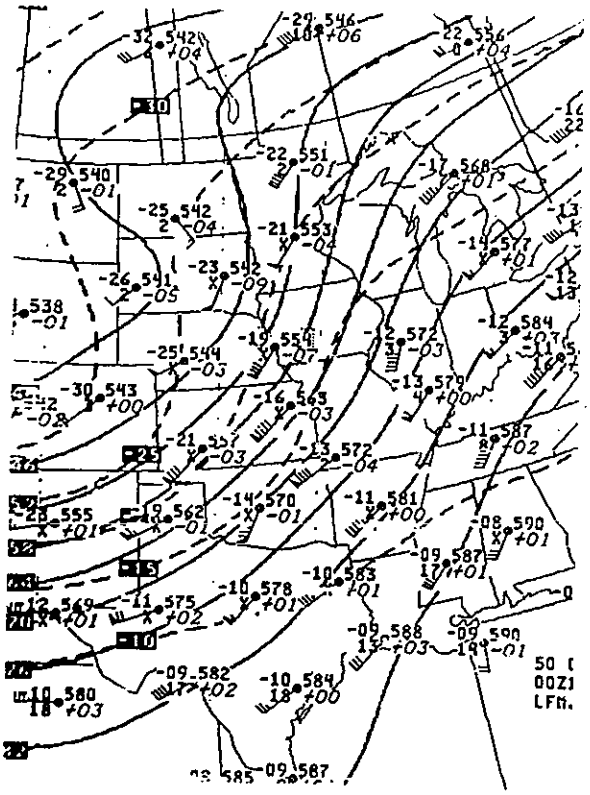
22 INJURIES TOTAL
7 MILLION DOLLARS DAMAGE AT RALPH AR



18NOV85-19NOV85 1032-0545 CST 12 REPORTS 5 TORNADOES

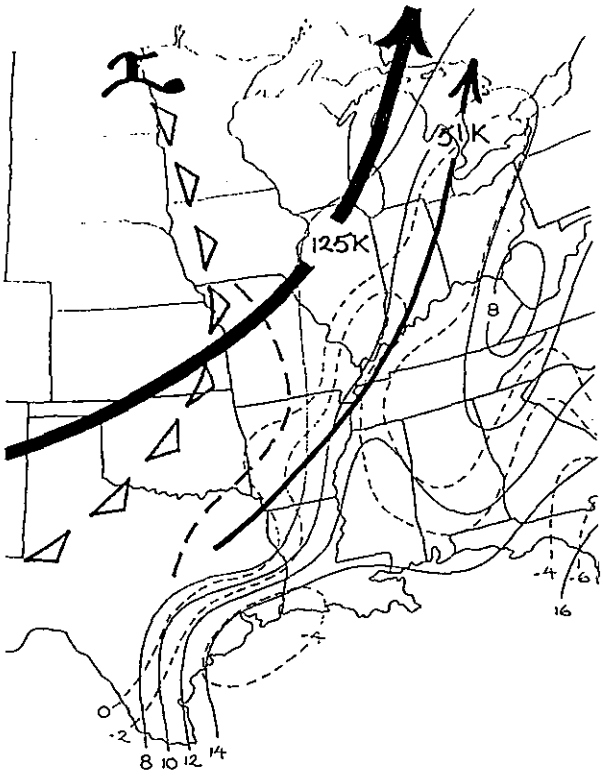


Surface 6PM CST November 18, 1985

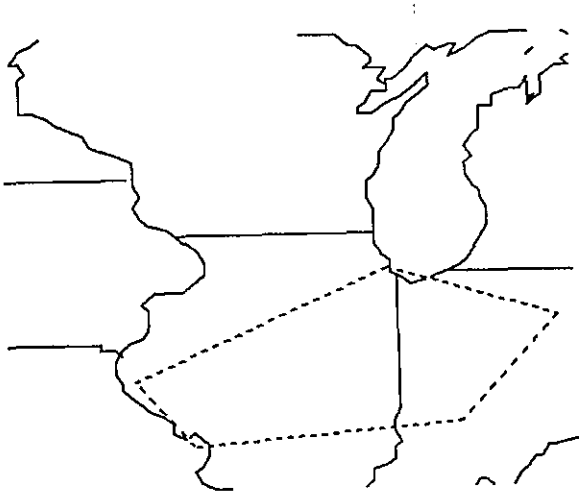


500 MB 6PM CST November 18, 1985

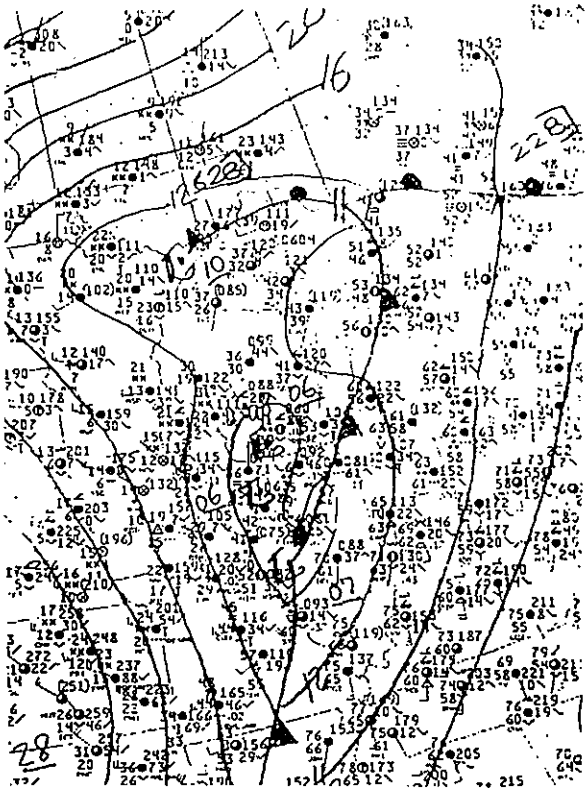
GOES 8PM CST November 18, 1985



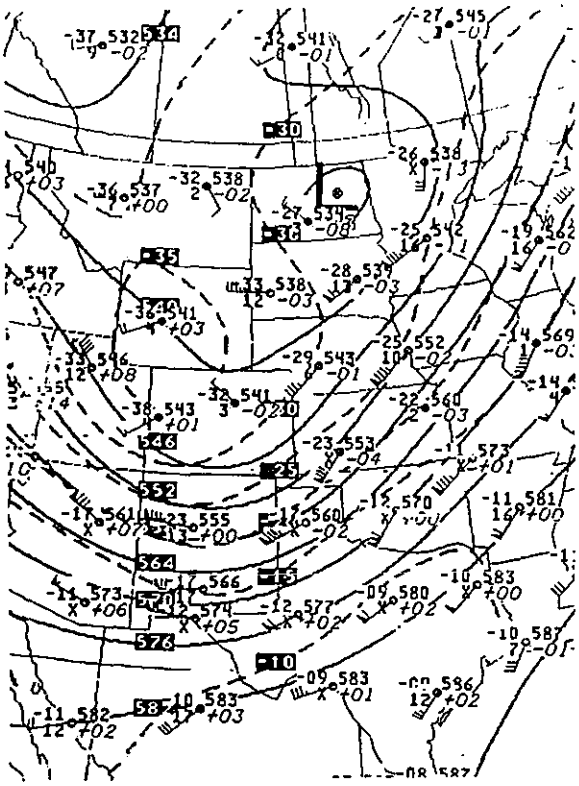
Composite 6PM CST November 19, 1985



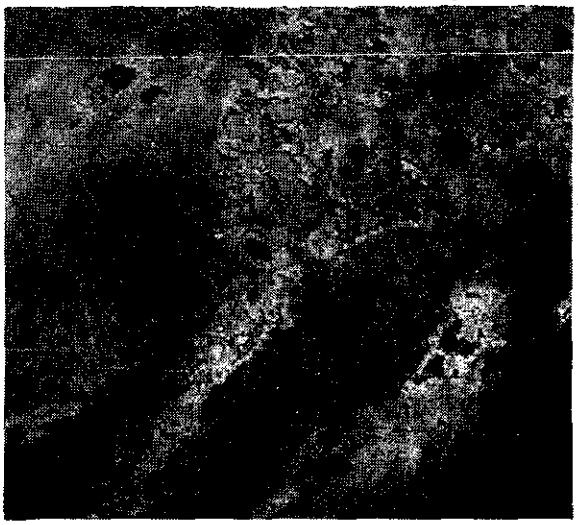
19NOV85 1400-2105 CST 20 REPORTS 2 TORNADOES



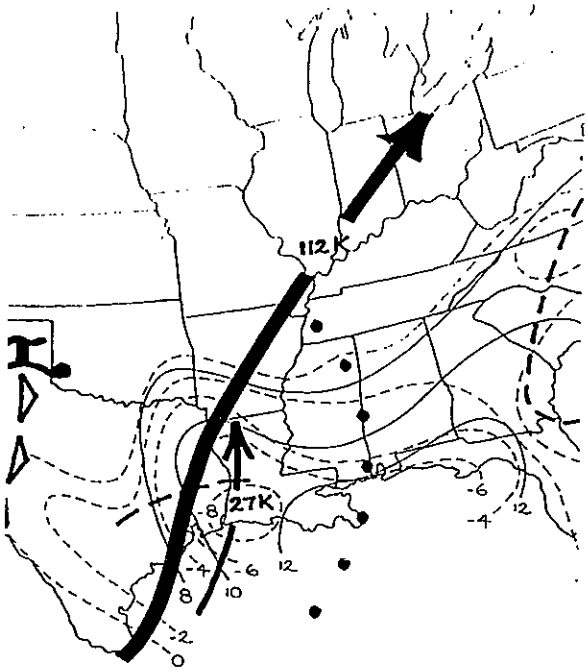
Surface 3PM CST November 19, 1985



500 MB 6 AM CST November 19, 1985

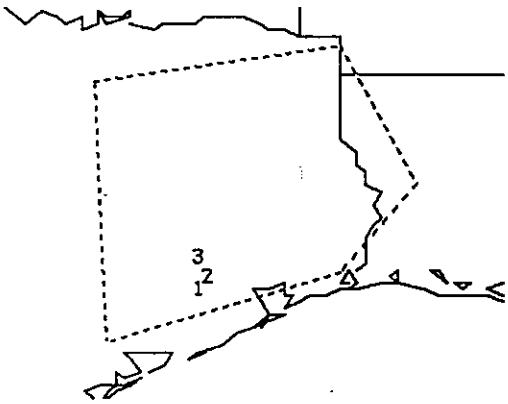


GOES 3PM CST November 19. 1985

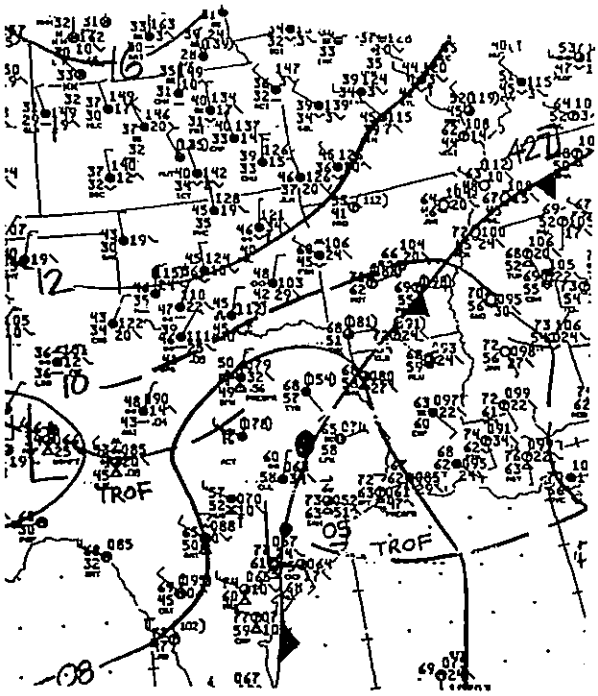


Composite 6PM CST February 5, 1986

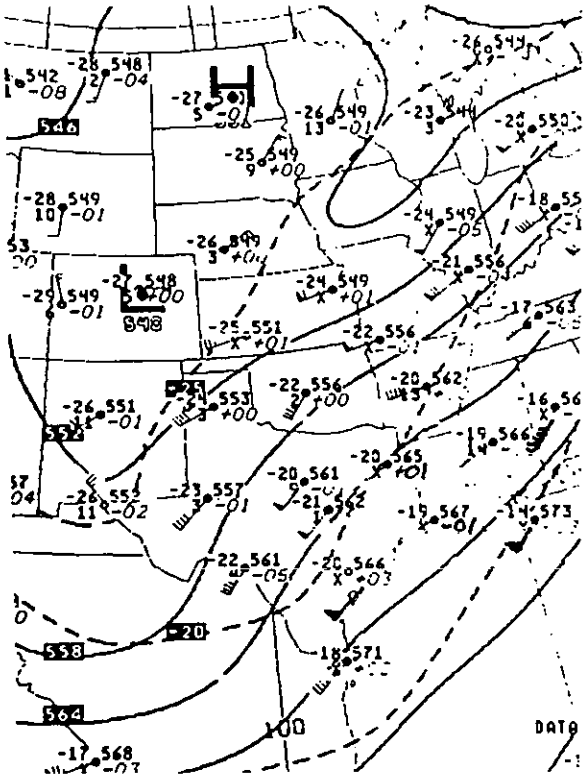
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1545	TORNADO-F2	TX	7 NW KATY	8			5
2	1615	TORNADO-F2	TX	5 S TOMBALL	2			5
3	1630	TORNADO-F3	TX	TOMBALL	5	2		7



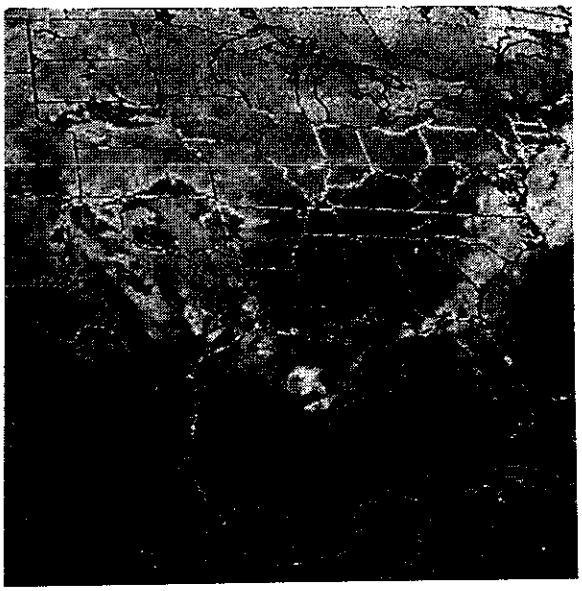
05FEB86 1430-2015 CST 31 REPORTS 12 TORNADOES



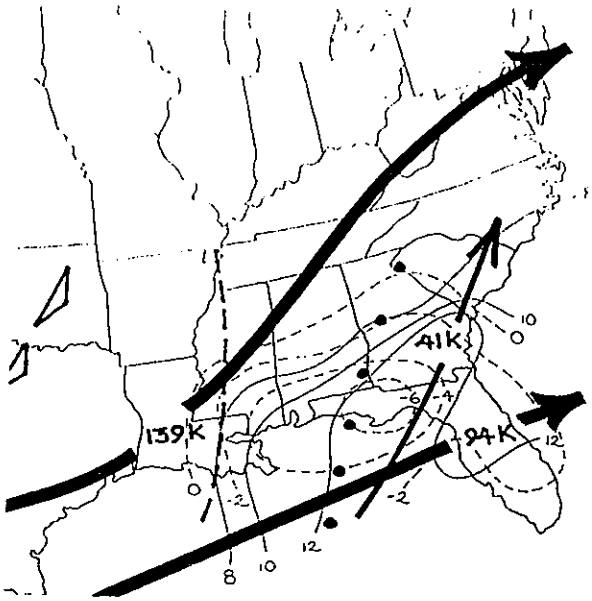
Surface 3PM CST February 5, 1986



500 MB 6AM CST February 5, 1986

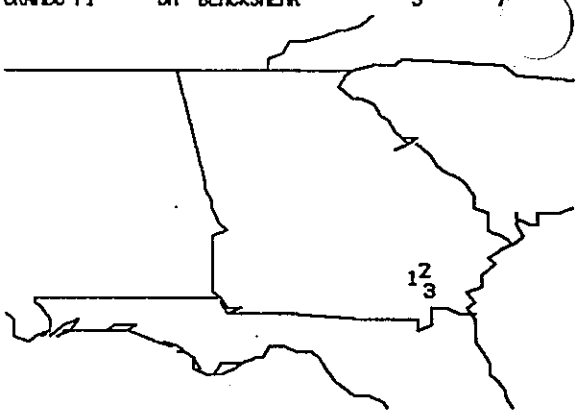


GOES 4:01PM CST February 5, 1986

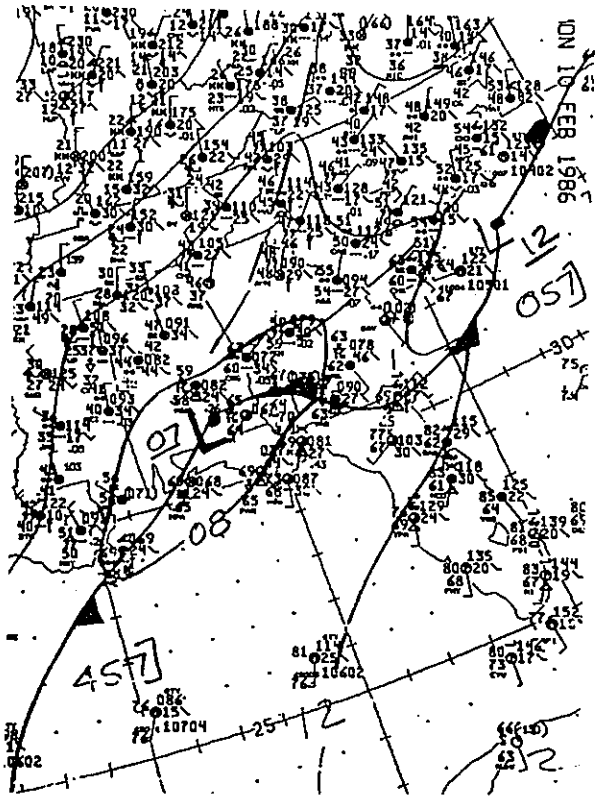


Composite 6PM CST February 10, 1986

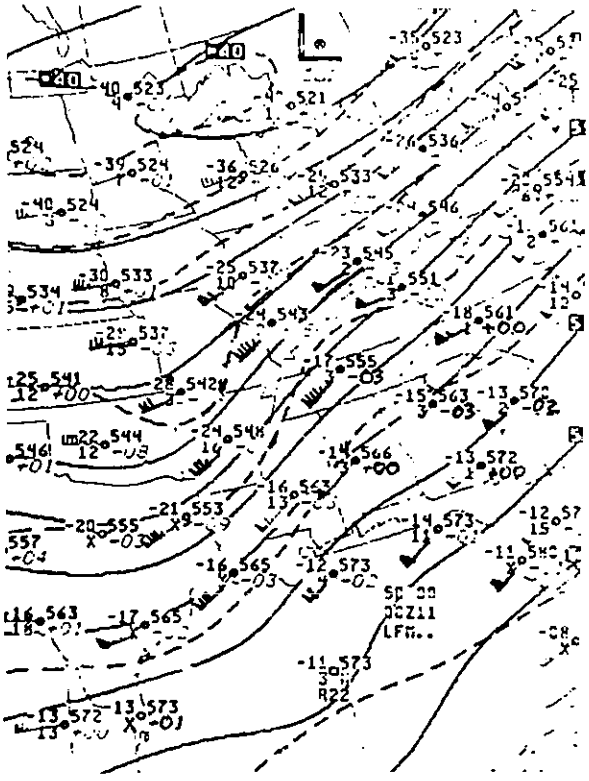
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	2205	TORNADO-F1	GA	WAYCROSS	4	2	5	
2	2210	TORNADO-F1	GA	WAYCROSS	8	12		
3	2230	TORNADO-F1	GA	BLACKSHEAR	5	7		



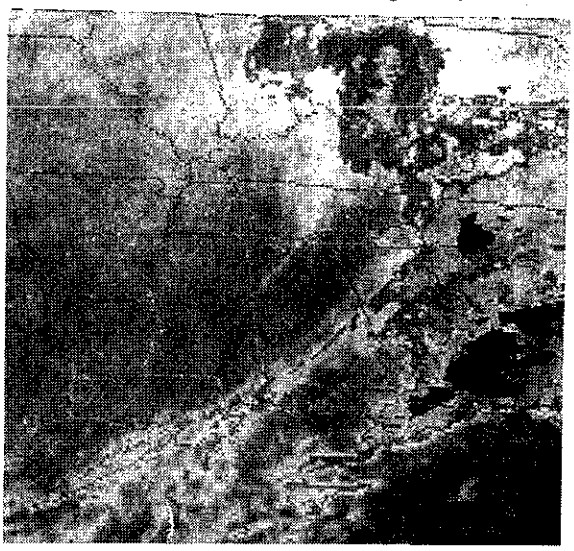
10FEB86 1245-2230 CST 7 REPORTS 3 TORNADOES



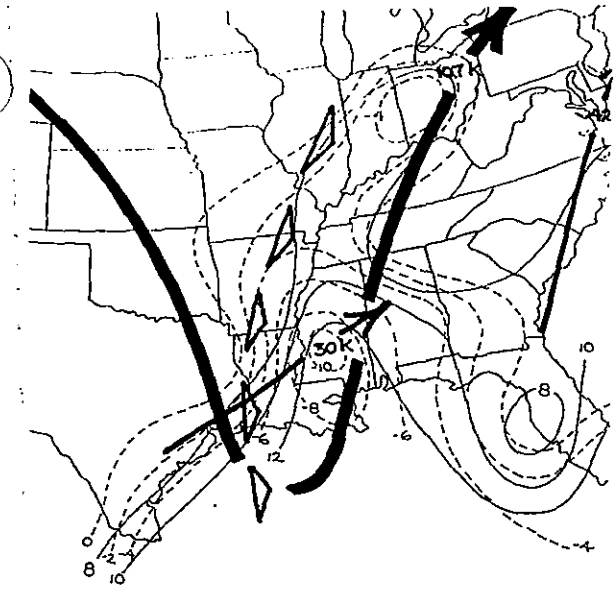
Surface 3PM CST February 10, 1986



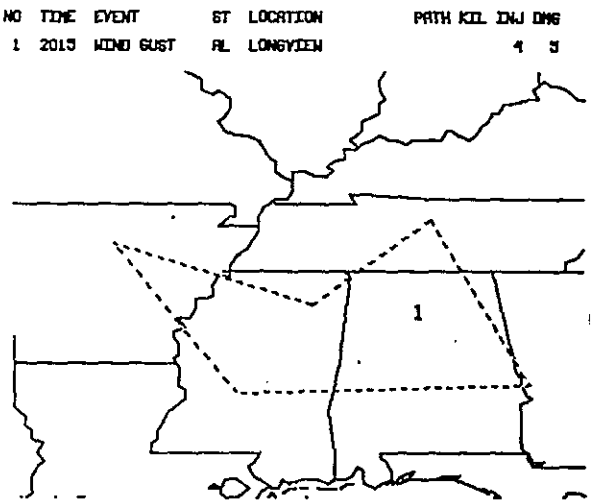
500 MB 6PM CST February 10, 1986

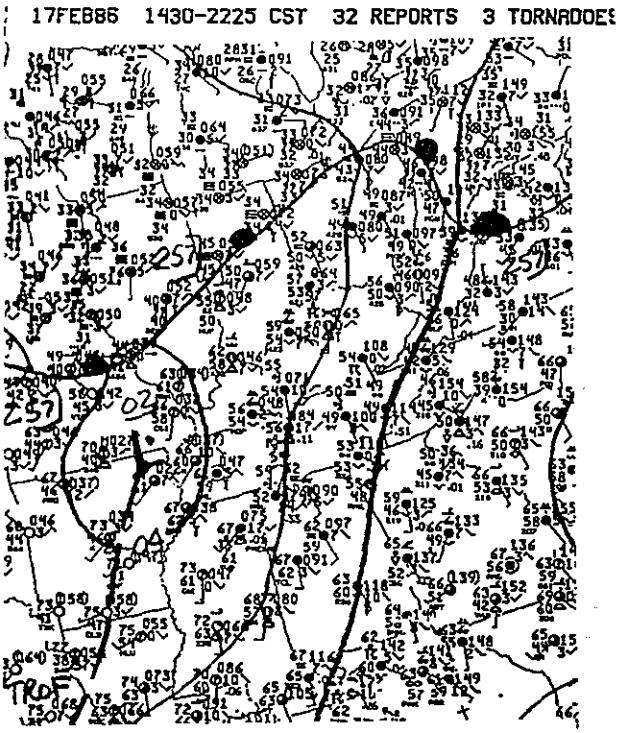


GOES 9:30 PM CDT February 10, 1986

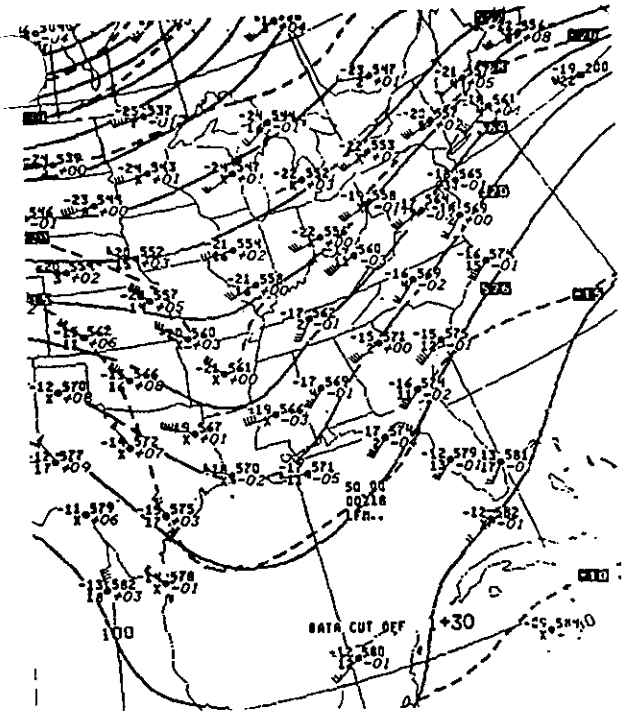


Composite 6PM CST February 17, 1986



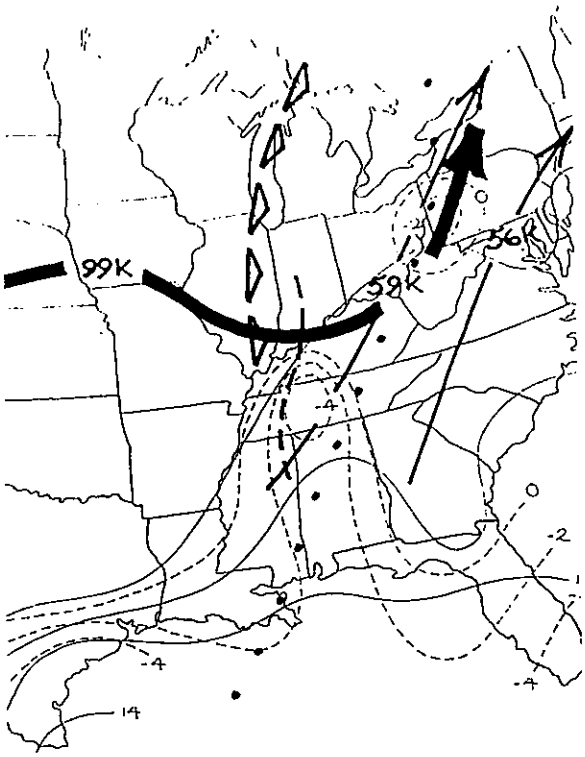


Surface 6 PM CST February 17, 1986



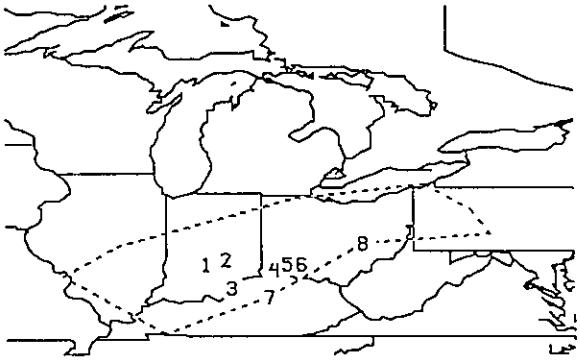
500 MB 6PM CST February 17, 1986

GOES 8PM CST February 17, 1986

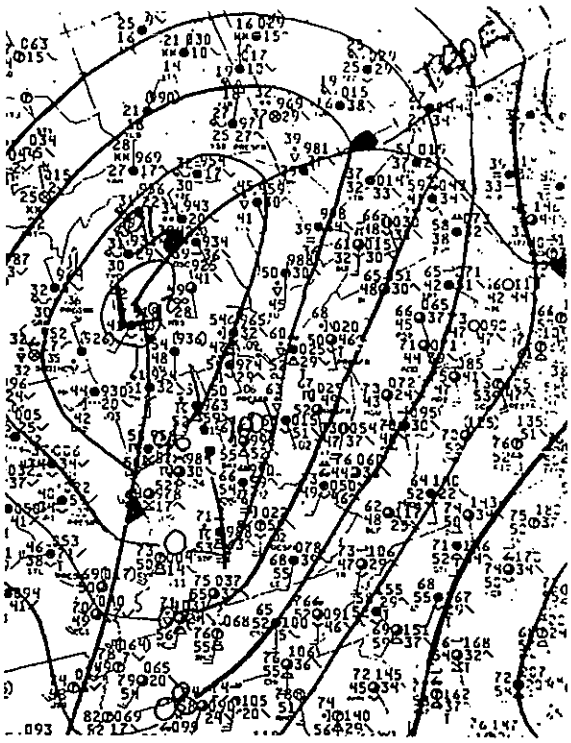


Composite 6PM CST March 10, 1986

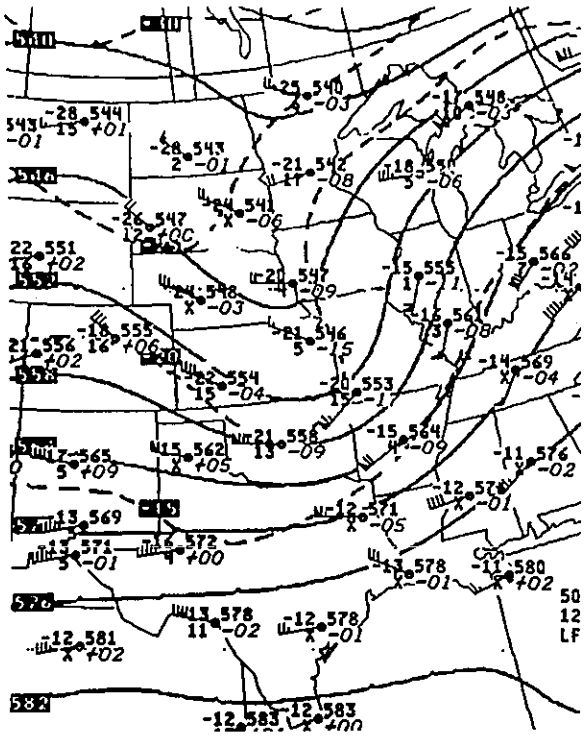
1 1328-1415 CST TORNADO-F3 MARTINSVILLE IN 22 INJ 25 MI
2 1410 CST TORNADO-F3 BOGGSTOWN IN 1 KIL 1 INJ 28 MI
3 1410 CST TORNADO-F2 AUSTIN IN 25 INJ 12 MI
4 1530 CST GUST 100 MPH COVINGTON KY 25 INJ $10 MIL DMG
5 1540 CST GUST NEWPORT KY 90 INJ $8 MIL DMG
6 1608 CST TORNADO-F2 WILMINGTON OH 10 INJ
7 1650-1705 CST TORNADO-F2 LEXINGTON KY 20 INJ $5 MIL DMG
8 1845 CST TORNADO-F2 2 SW NORWICH OH 1 KIL 3 INJ



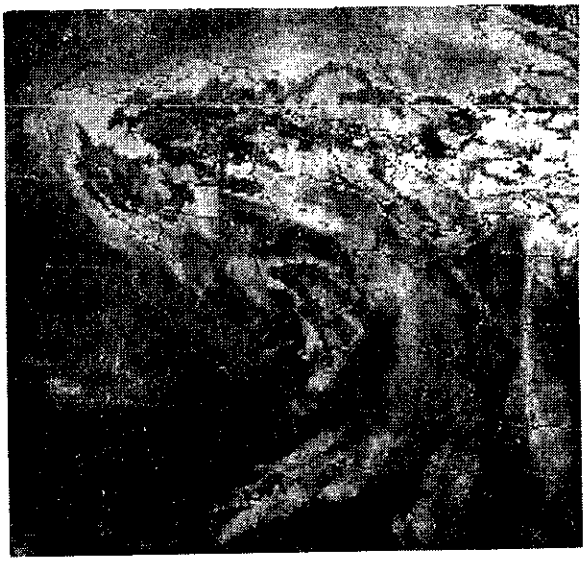
10MAR86 1158-2130 CST 82 REPORTS 14 TORNADOES



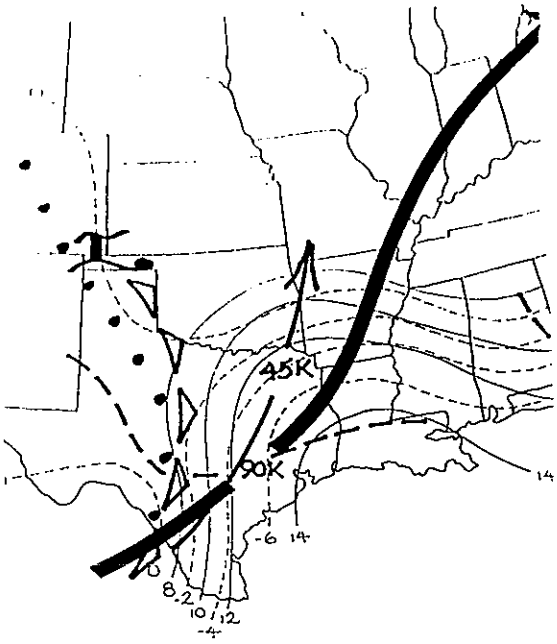
Surface 3 PM CST March 10, 1986



500 MB 6AM CST March 10, 1986

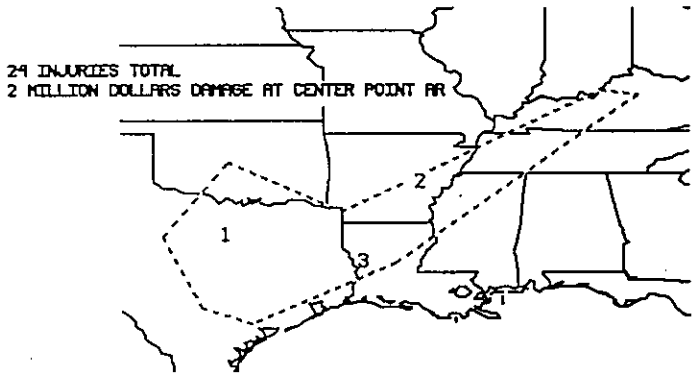


GOES 2PM CST March 10, 1986

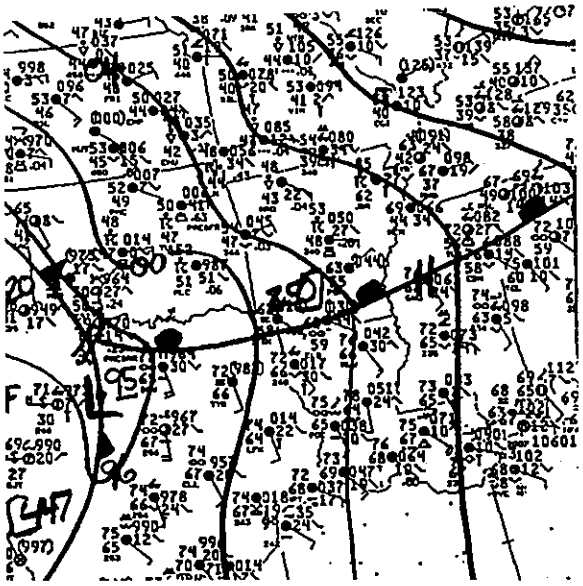


Composite 6PM CST March 11, 1986

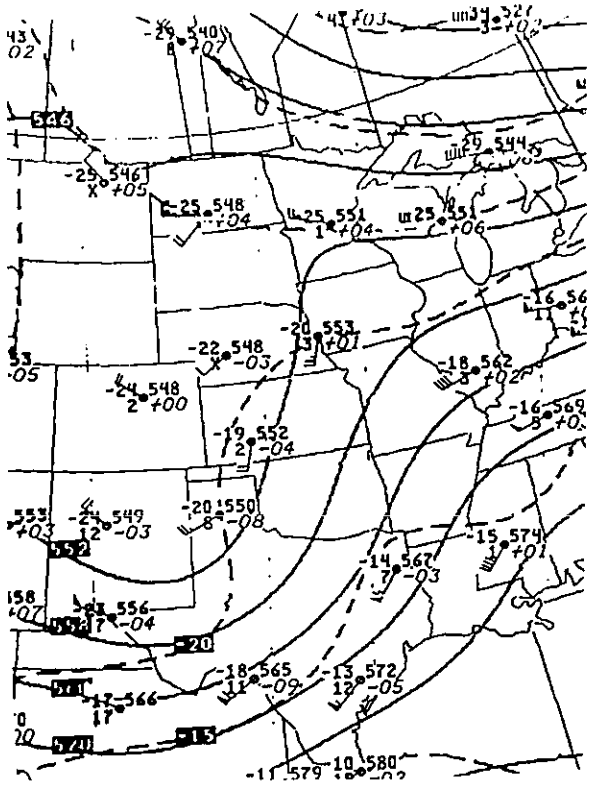
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1708	TORNADO-F2	TX	WEATHERFORD	9			
2	2040	GUST	AR	CENTER POINT			1	6
3	0050	GUST 85 MPH	LA	FISHER			1	5



11MAR86-12MAR86 1233-0600 CST 129 REPORTS 11 TORNADOES

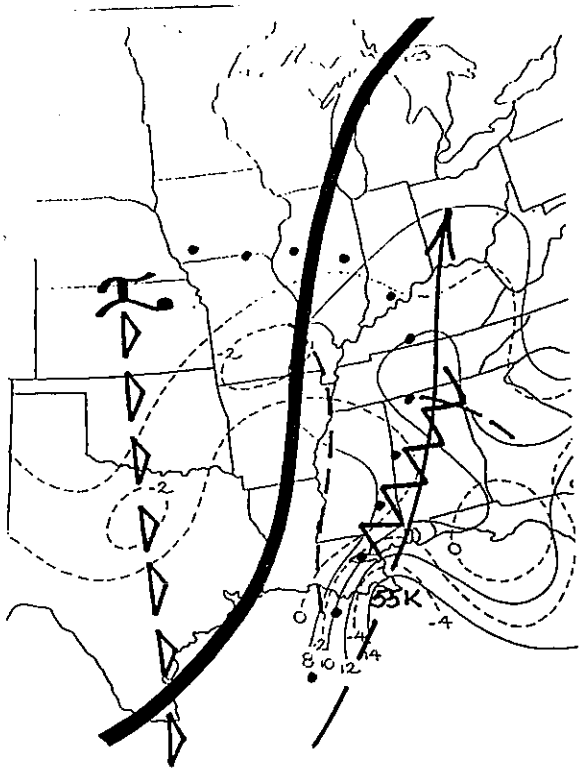


Surface 6PM CST March 11, 1986



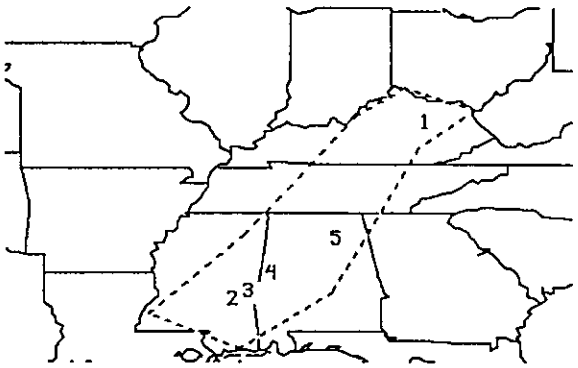
500 MB 6PM CST March 11, 1986

GOES 6PM CST March 11, 1986

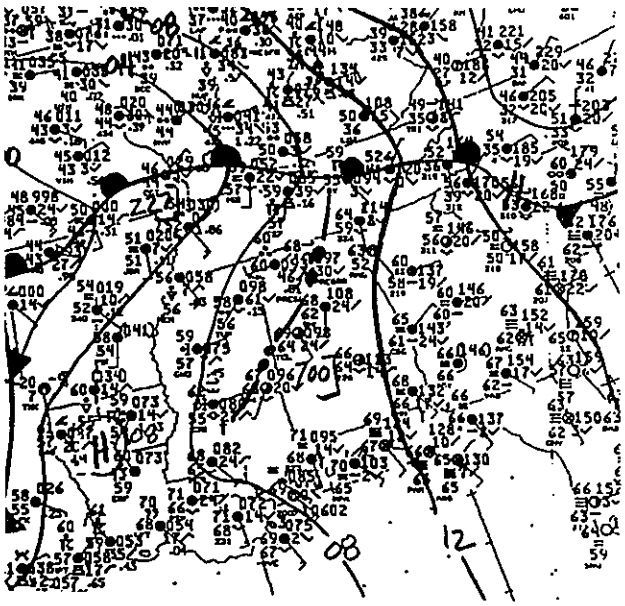


Composite 6PM CST March 12, 1986

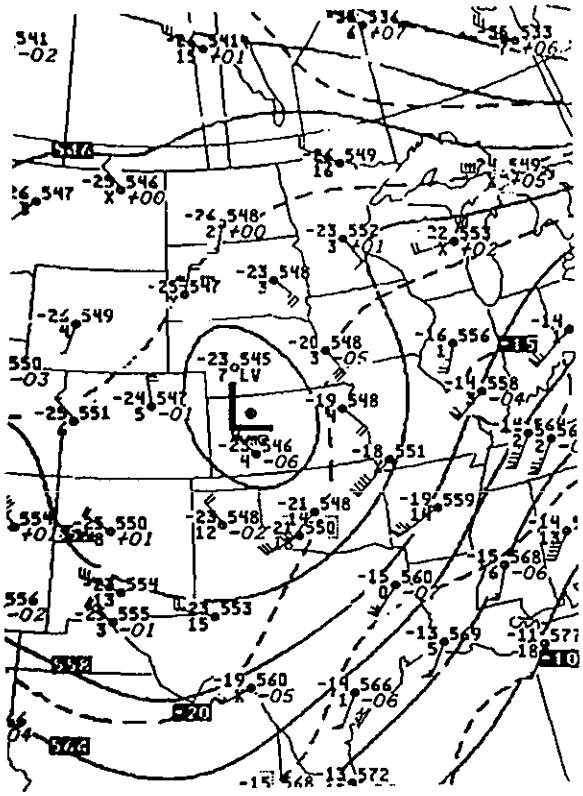
NU	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	0615	GUST	KY	CARLISLE			8	5
2	1207	TORNADO-F3	MS	TAYLORVILLE	31		2	
3	1306	TORNADO-F4	MS	MERIDIAN	22		8	
4	1415	TORNADO-F3	AL	ALICEVILLE	16	2		
5	2020	TORNADO-F2	AL	ARAB	7		5	



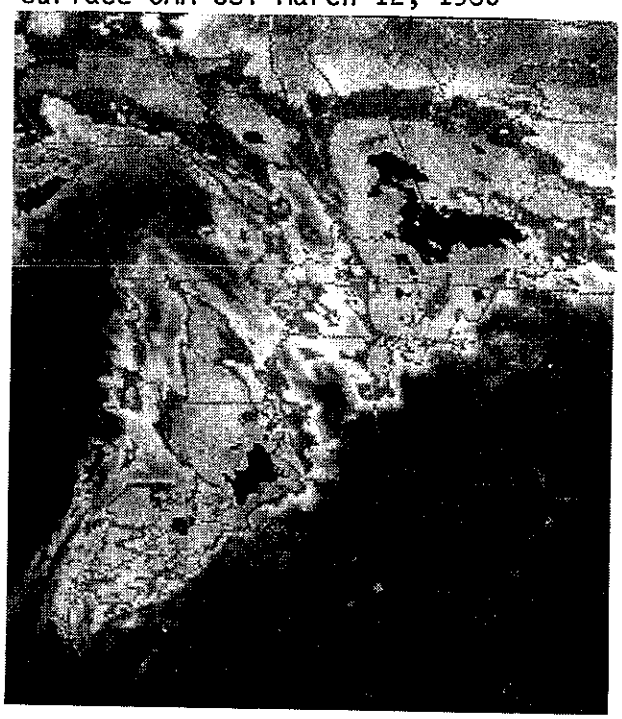
12MAR86 0600-2340 CST 55 REPORTS 13 TORNADOES



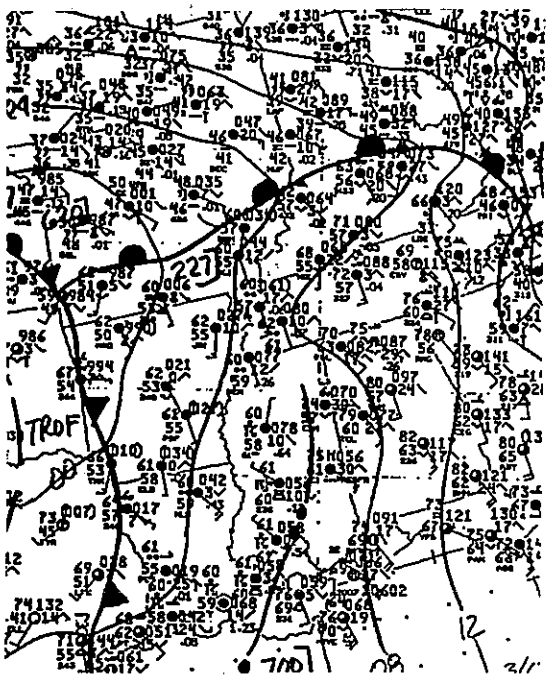
Surface 6AM CST March 12, 1986



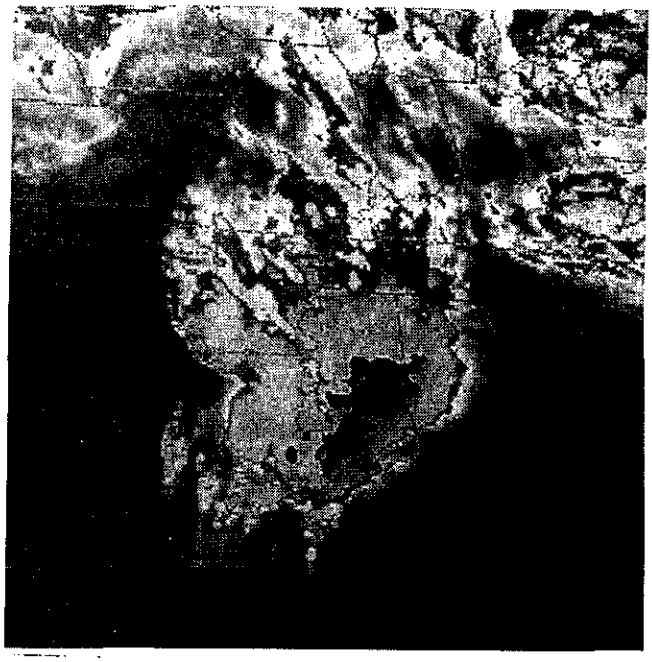
500 MB 6AM CST March 12, 1986



GOES 6AM CST March 12, 1986

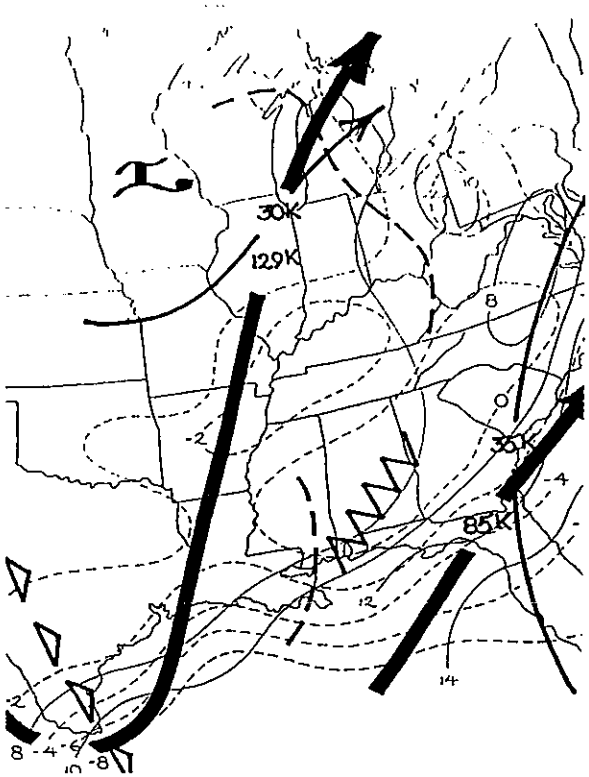


Surface 12Noon CST March 12, 1986



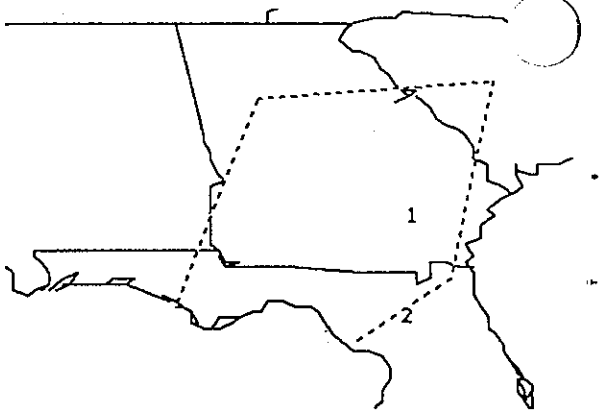
GOES 12Noon March 12, 1986

GOES 8PM CST March 12, 1986

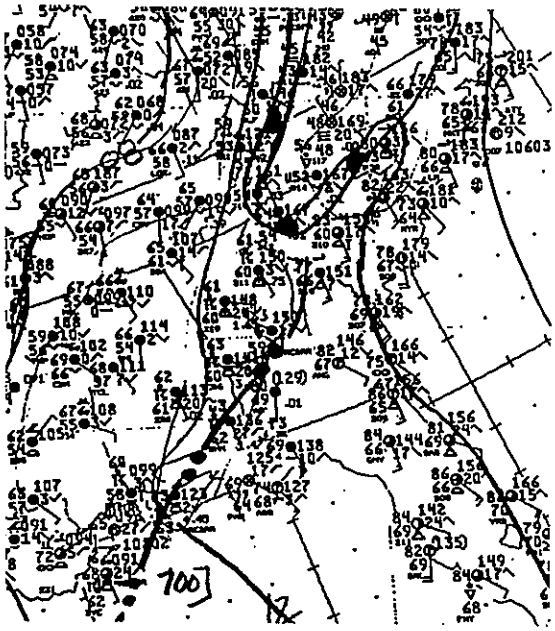


Composite 6PM CST March 13, 1986

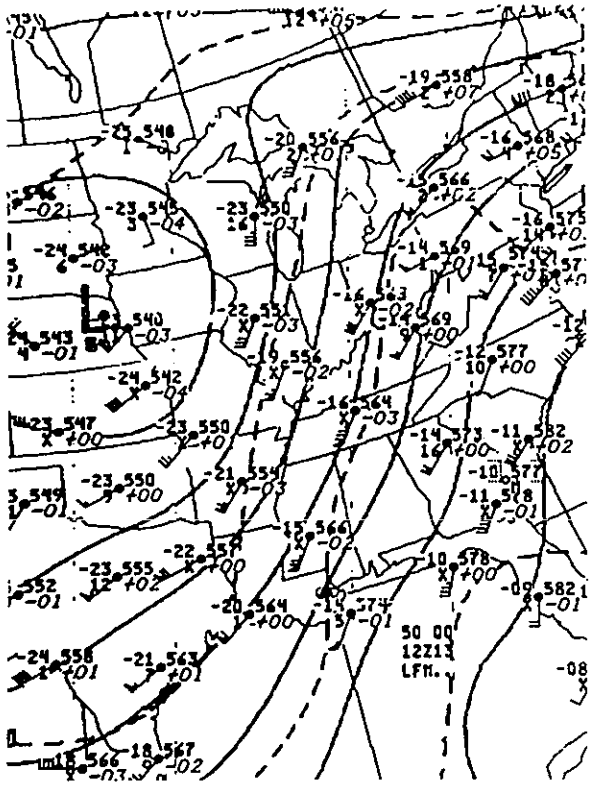
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1345	TORNADO-F1	GA	5 S BAXLEY			4	5
2	0517	TORNADO-F2	FL	GAINESVILLE		2		6



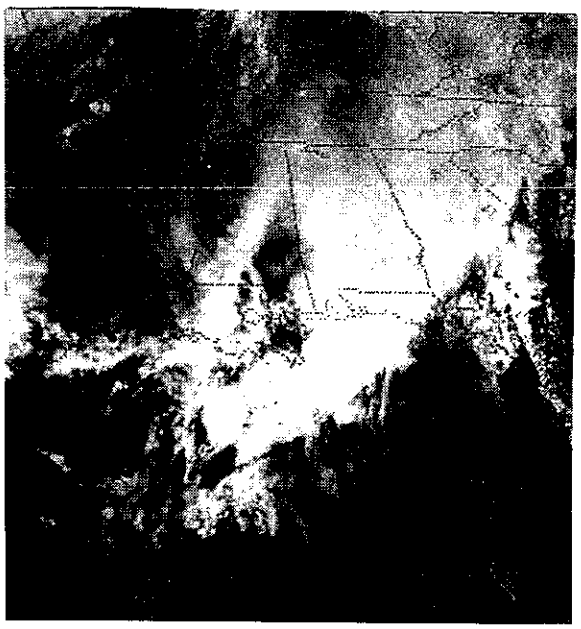
13MAR86-14MAR86 0600-0545 CST 27 REPORTS 3 TORNADOES



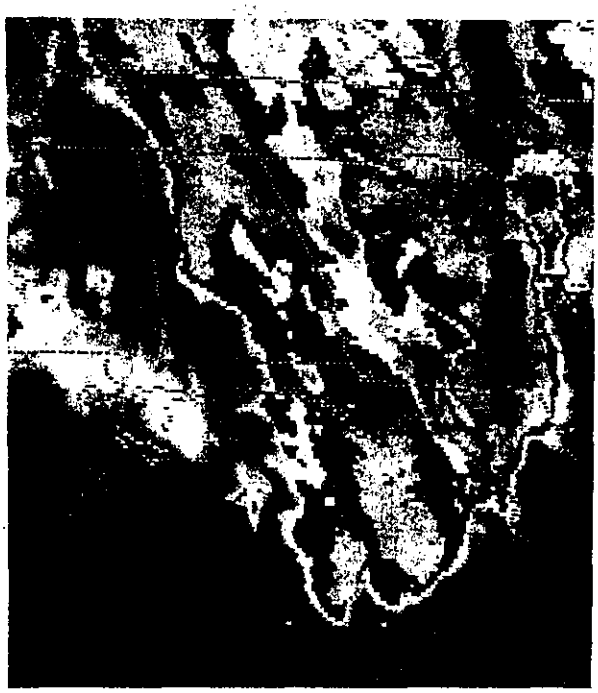
Surface 12Noon CST March 13, 1986



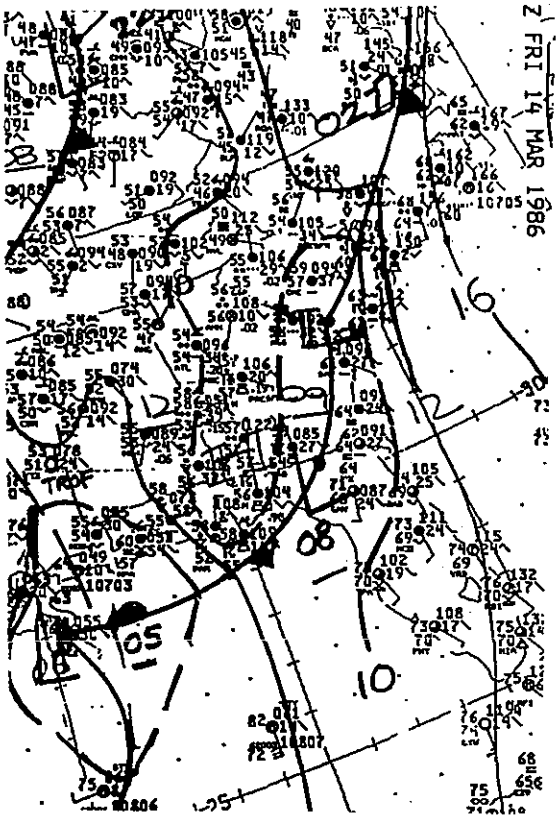
500 MB 6AM CST March 13, 1986



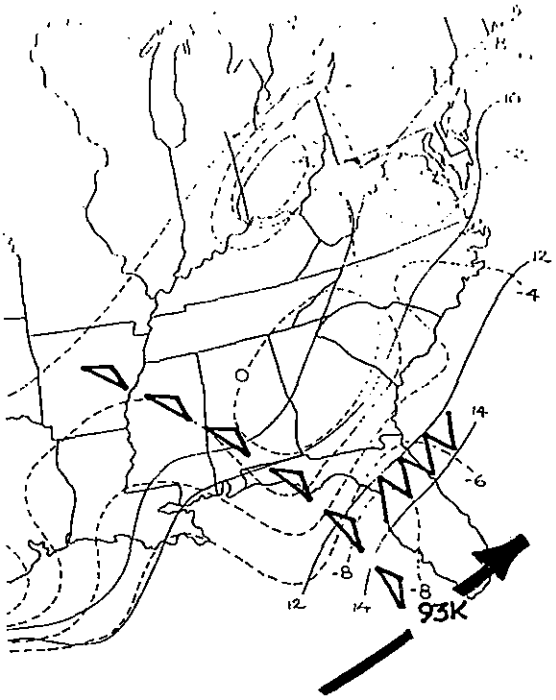
GOES 1:30PM CST March 13, 1986



GOES 5 AM CST March 14, 1986

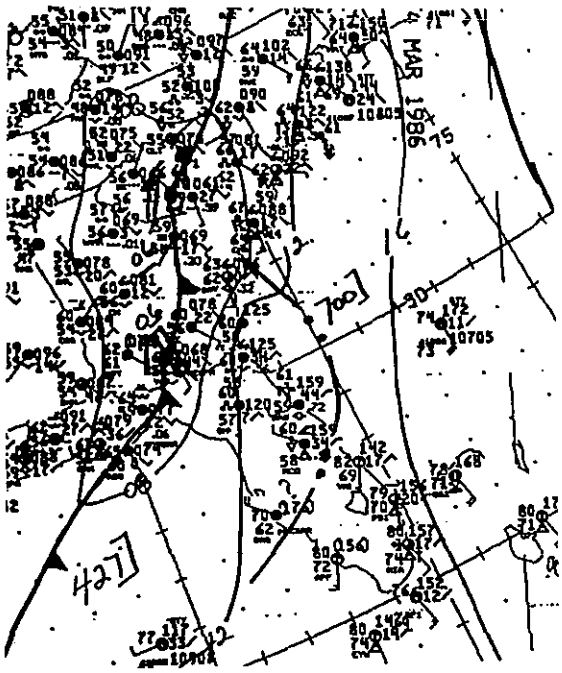


Surface 3AM CST March 14, 1986

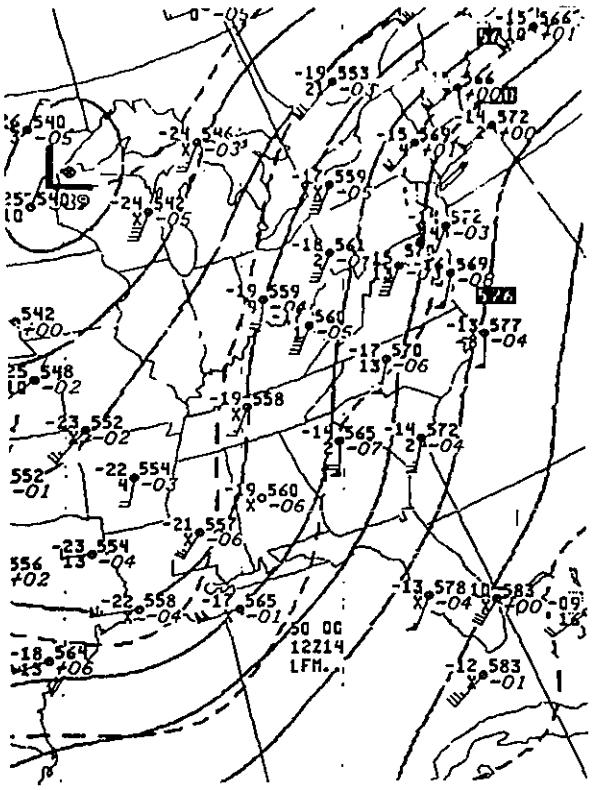


Composite 6AM CST March 14, 1986

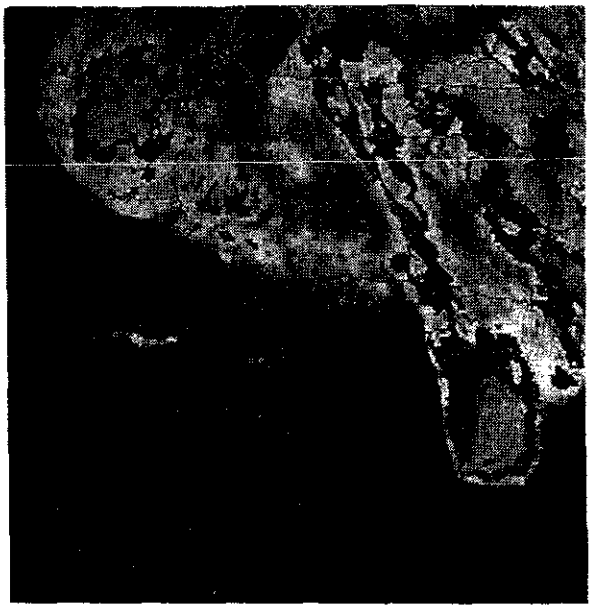
14MAR86 0600-1345 CST 18 REPORTS 8 TORNADOES



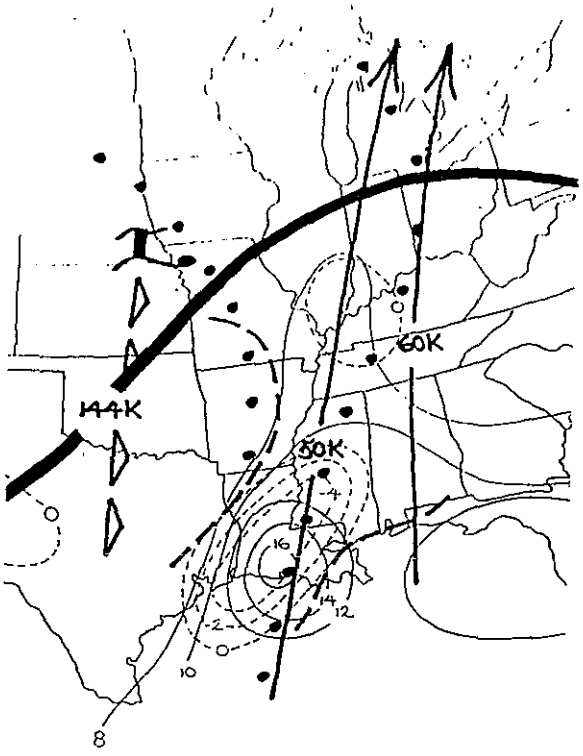
Surface 9AM CST March 14, 1986



500 MB 6AM CST March 14, 1986

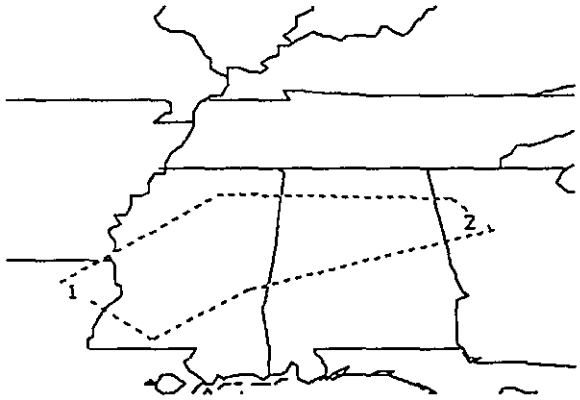


GOES 8AM CST March 14, 1986

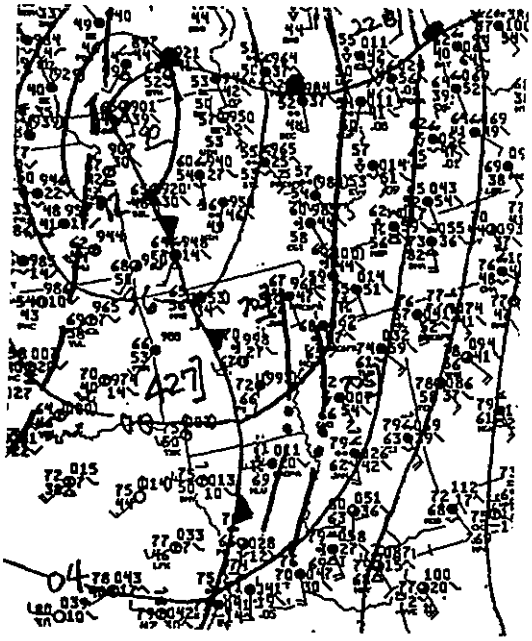


Composite 6PM CST March 18, 1986

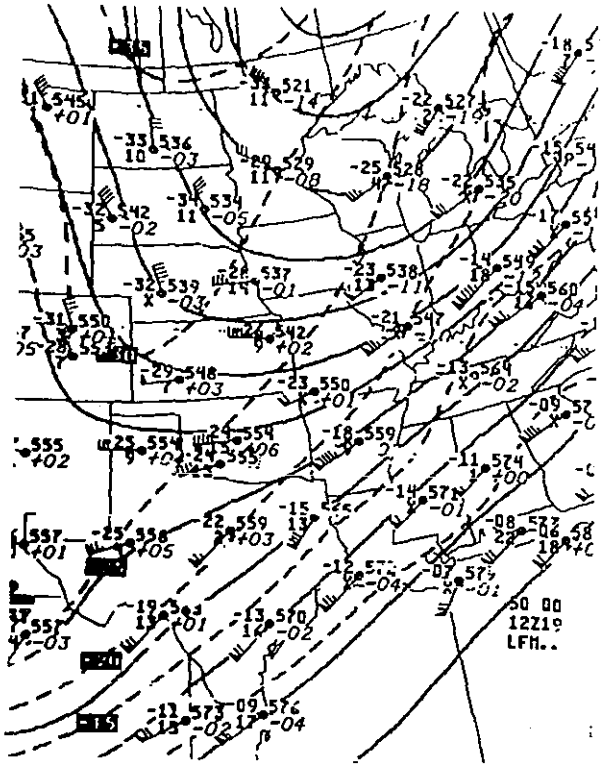
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1425	TORNADO-F2	LA	CHATHAM	2	2	5	
2	0532	TORNADO-F2	GA	MARIETTA	6	15	7	



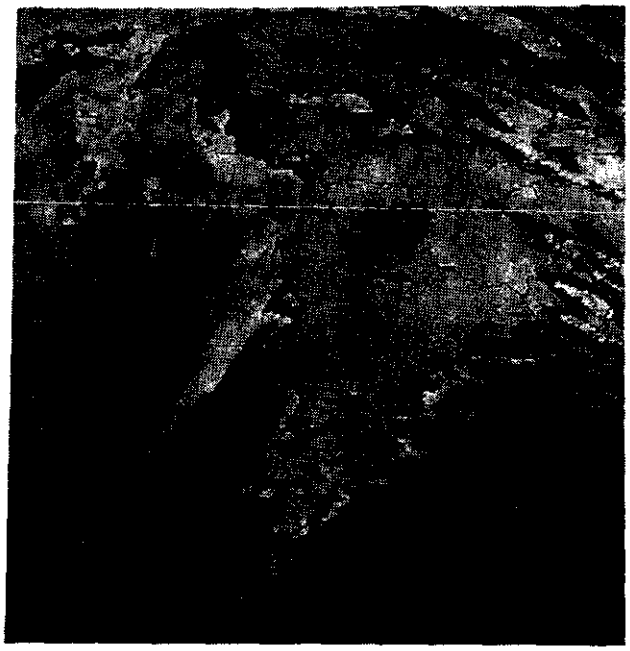
18MAR86-19MAR86 1401-0537 CST 18 REPORTS 12 TORNADOES



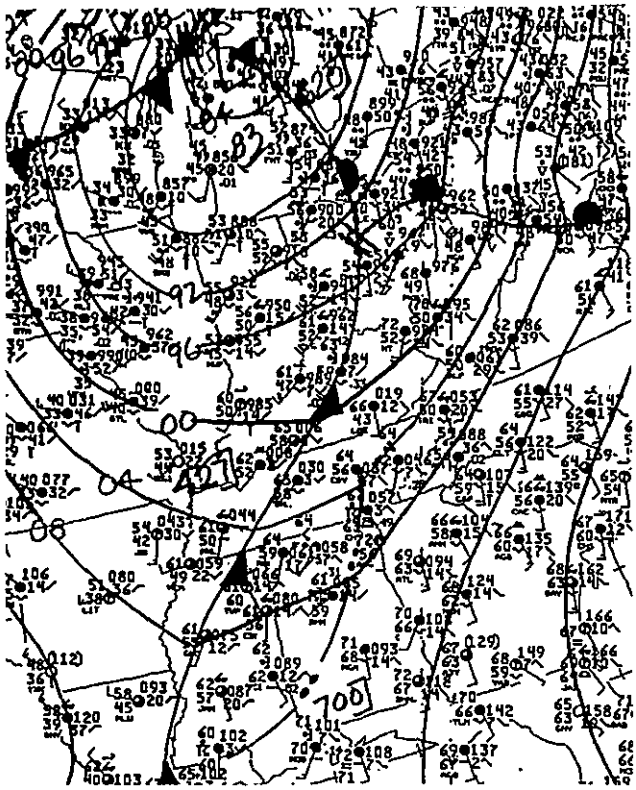
Surface 3PM CST March 18, 1986



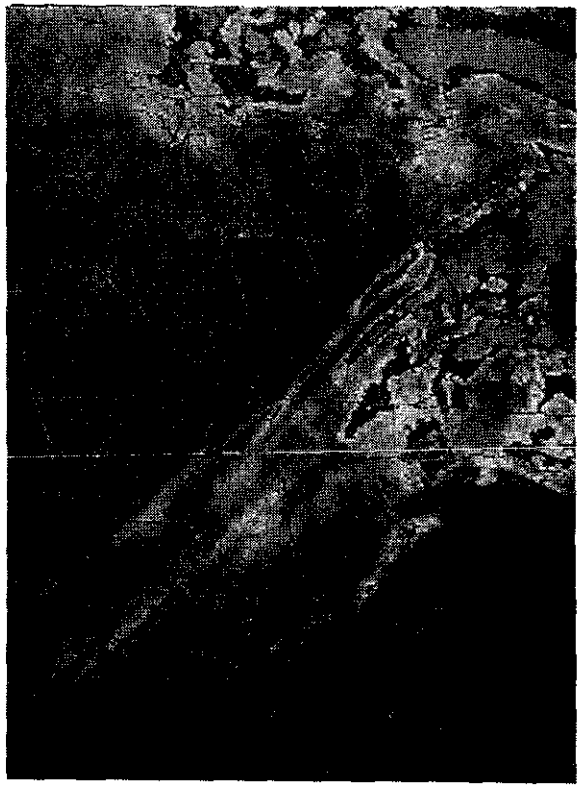
500 MB 6AM CST March 18, 1986



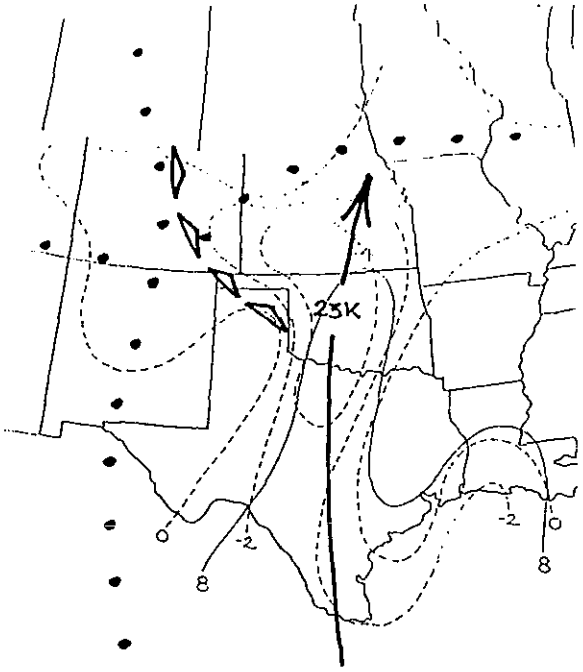
GOES 3PM CST March 18, 1986



Surface 3AM CST March 19, 1986



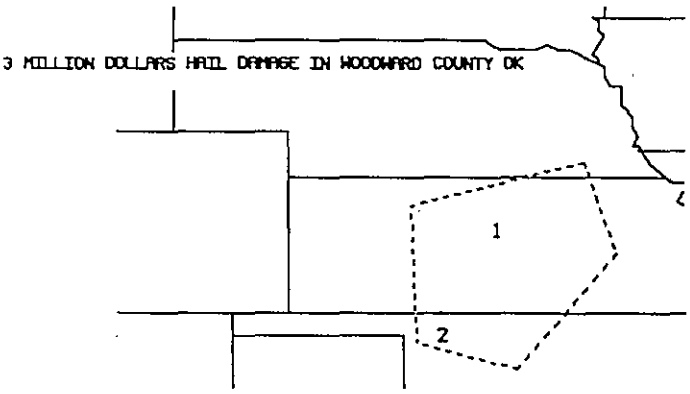
GOES 5AM CST March 19, 1986



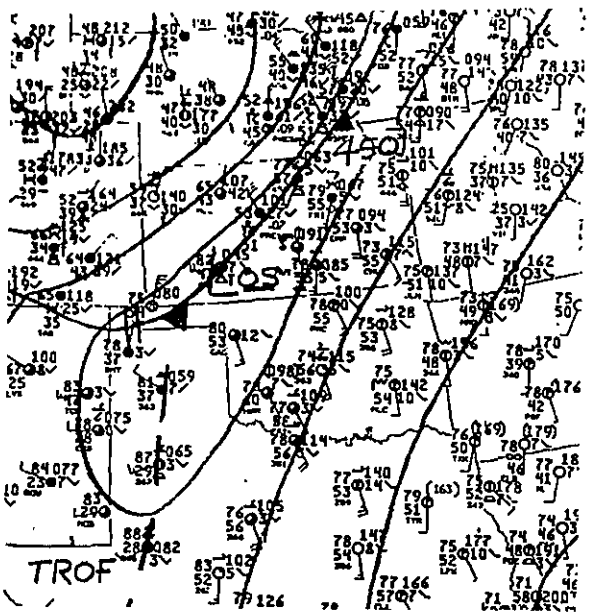
Composite 6PM CST March 31, 1986

NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1755	GUST 81 MPH	KS	SYLVAN GROVE				3
2	2045	2.00 INCH HAIL	OK	WOODWARD COUNTY				6

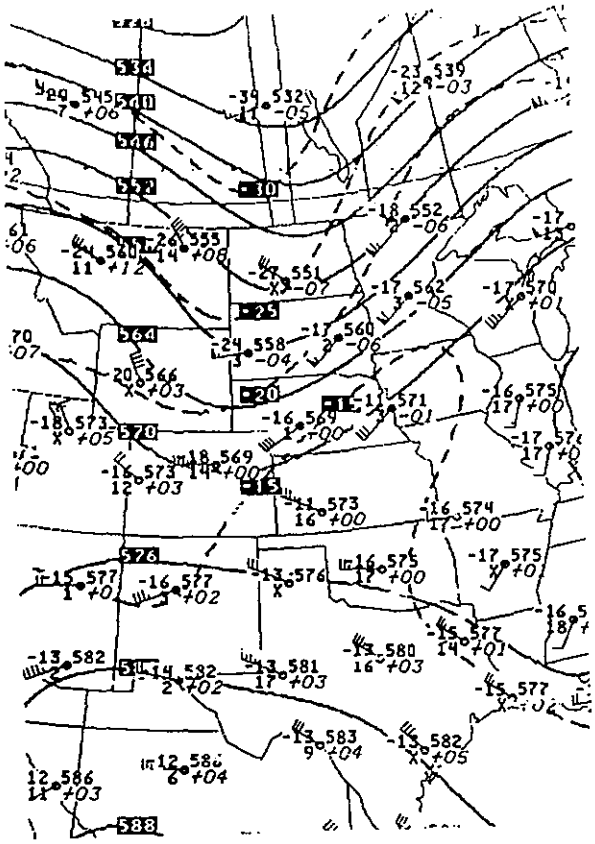
3 MILLION DOLLARS HAIL DAMAGE IN WOODWARD COUNTY OK



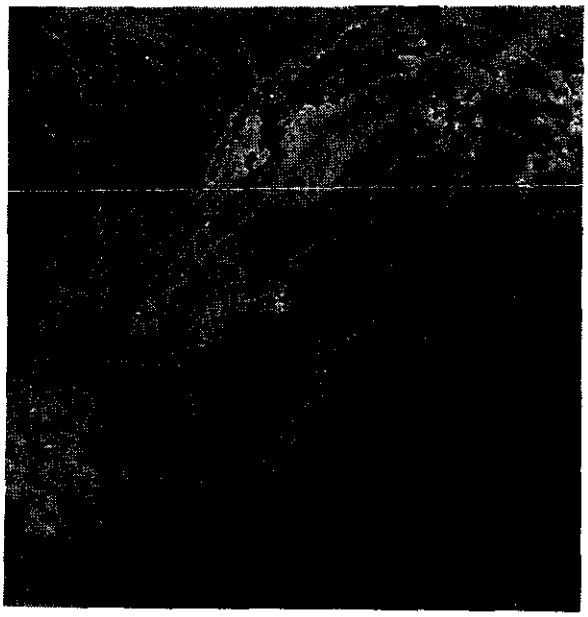
31MAR86 1605-2230 CST 38 REPORTS



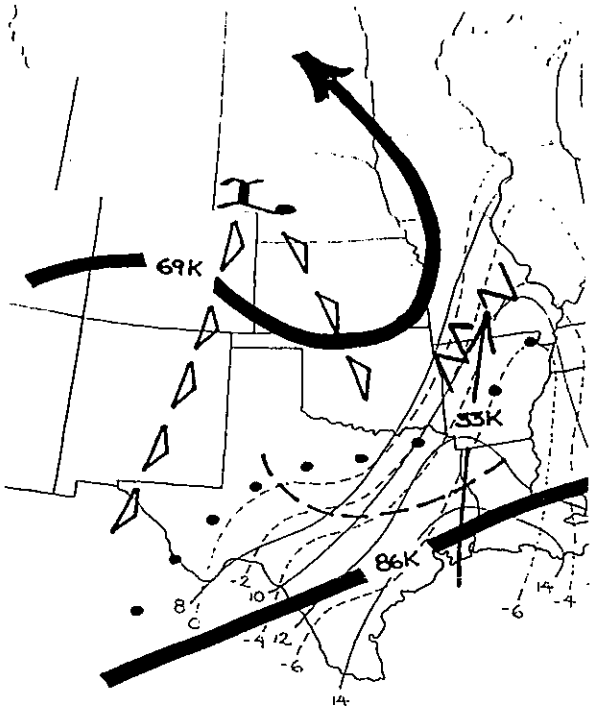
Surface 6PM CST March 31, 1986



500MB 6PM CST March 31, 1986

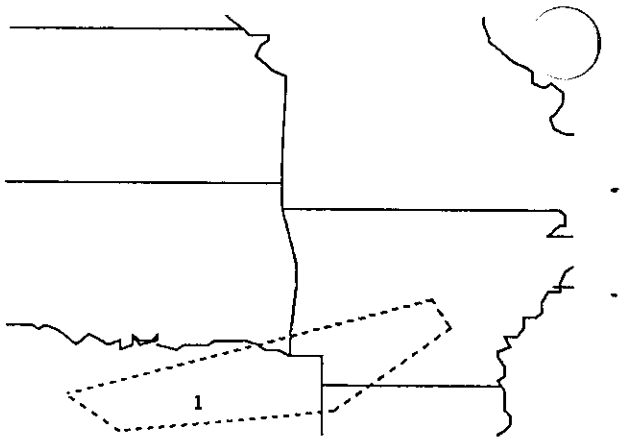


GOES 6PM CST March 31, 1986

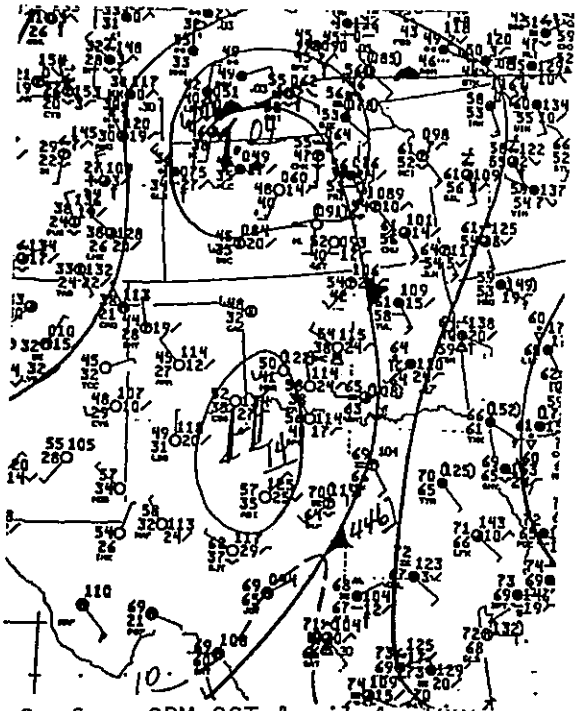


Composite 6PM CST April 4, 1986

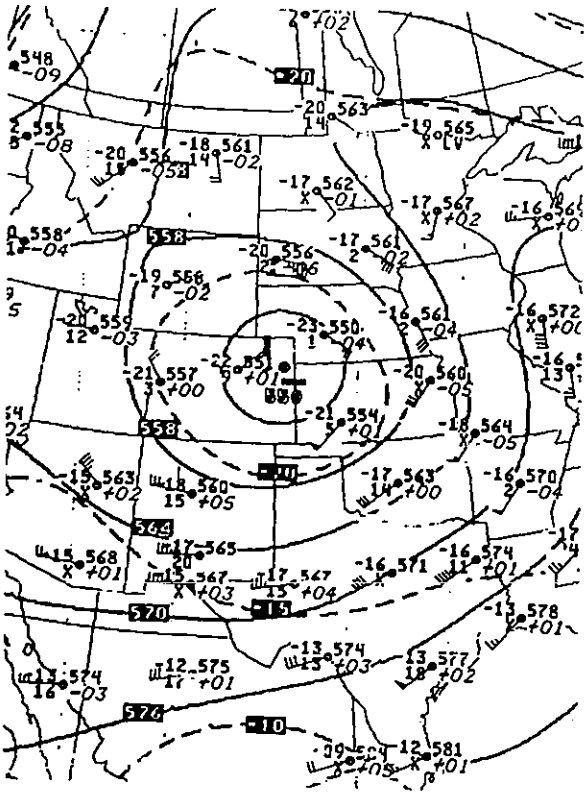
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	2030	TORNADO-F1	TX	3 N CANTON			2	5



04APR86 1125-2145 CST 93 REPORTS 7 TORNADOES

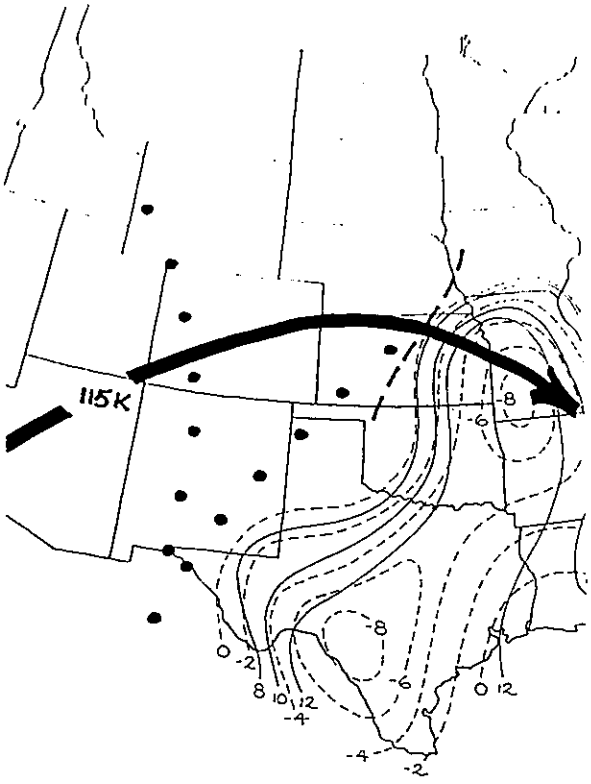


Surface 9PM CST April 4, 1986



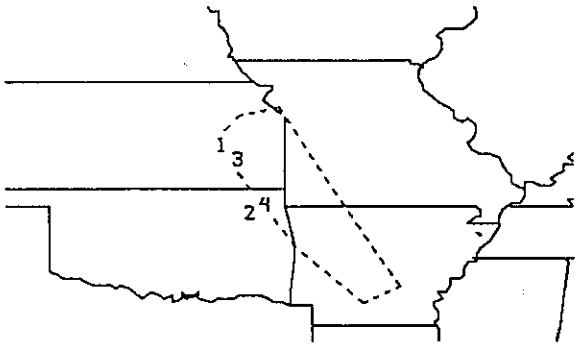
500 MB 6PM CST April 4, 1986

GOES 8:30 PM CST April 4, 1986

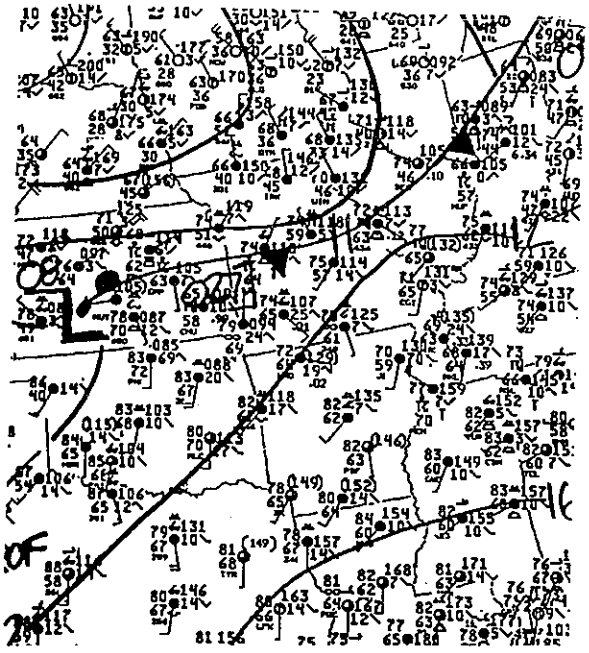


Composite 6PM CST April 7, 1986

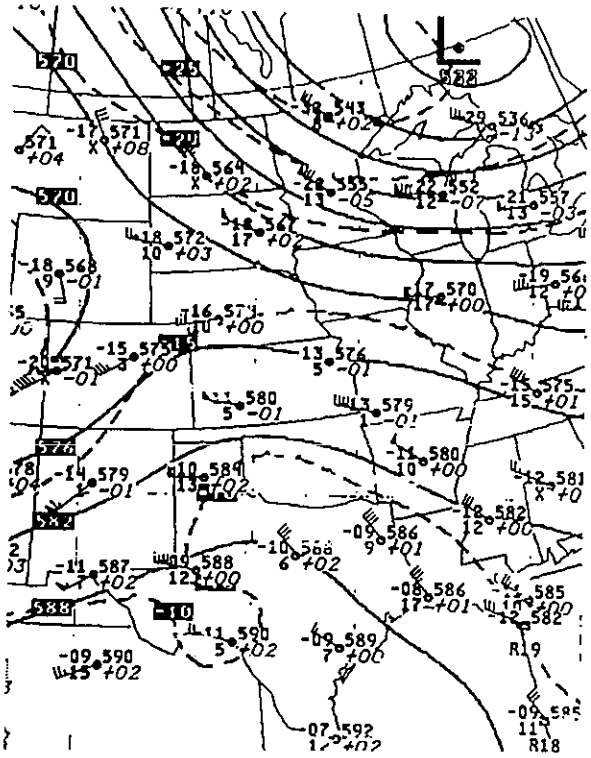
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1725	4.00 INCH HAIL	KS	MADISON				5
2	1749	TORNADO-F2	OK	4 NW ADAIR		5		5
3	1745	TORNADO-F2	KS	5 NW VIRGIL		22		5
4	1807	4.00 INCH HAIL	OK	PENSACOLA				



07APR86-08APR86 1425-0335 CST 86 REPORTS 12 TORNADOES

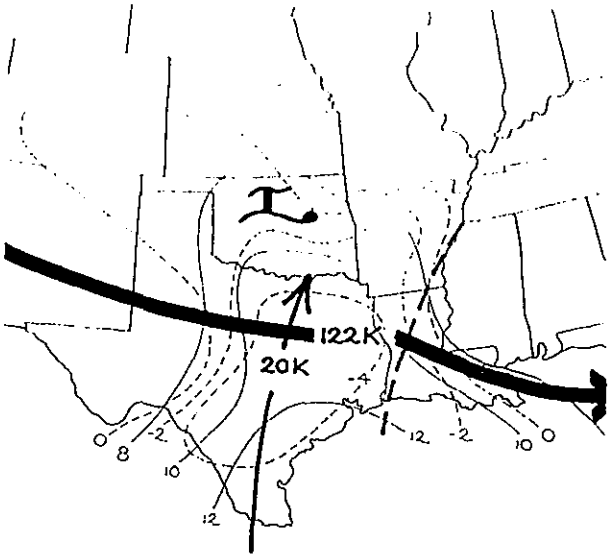


Surface 6PM CST April 7, 1986



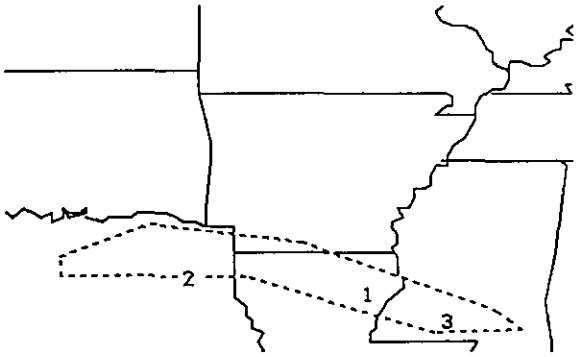
500 MB 6PM CST April 7,1986

GOES 6PM CST April 7, 1986

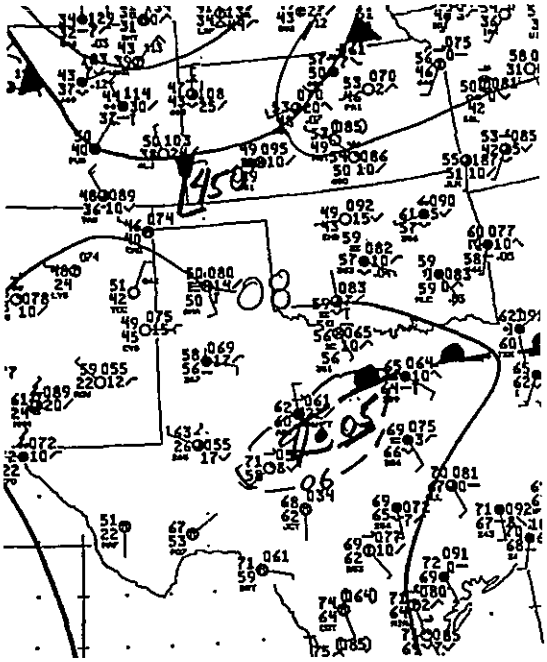


Composite 6PM CST April 11, 1986

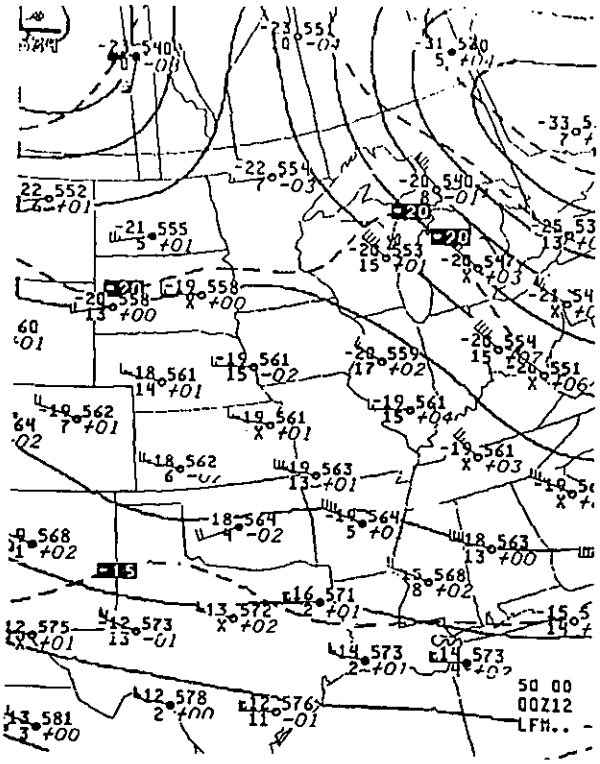
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	0009	TORNADO-F2	LA	WINNSBORO	2	0	3	
2	0300	GUST 85 MPH	TX	KILGORE		1	0	
3	0420	TORNADO-F2	MS	BROOKHAVEN	24	0	0	



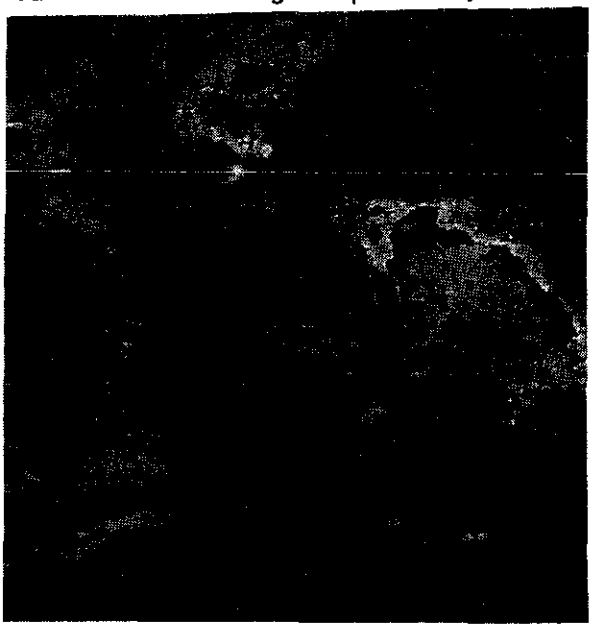
11APR86-12APR86 2130-0530 CST 73 REPORTS 6 TORNADOES



Surface 12 Midnight April 11, 1986

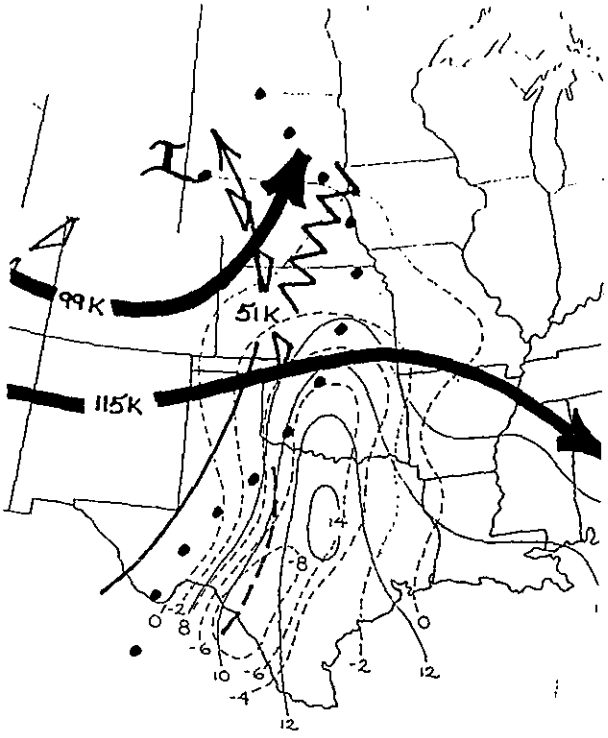


500 MB 6PM CST April 11, 1986



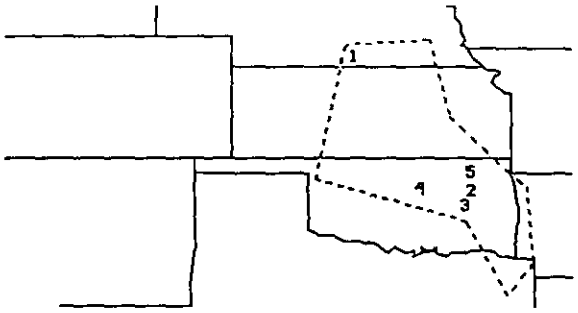
GOES 12 Midnight April 11, 1986

GOES 3:01AM CST April 12, 1986

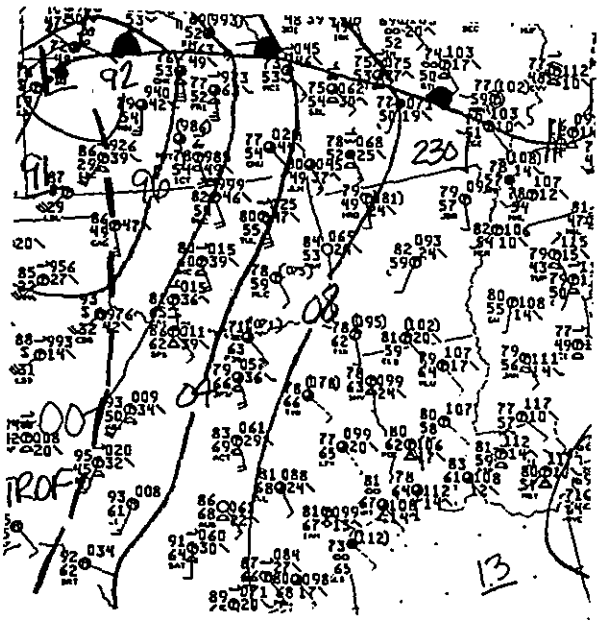


Composite 6PM CST April 13, 1986

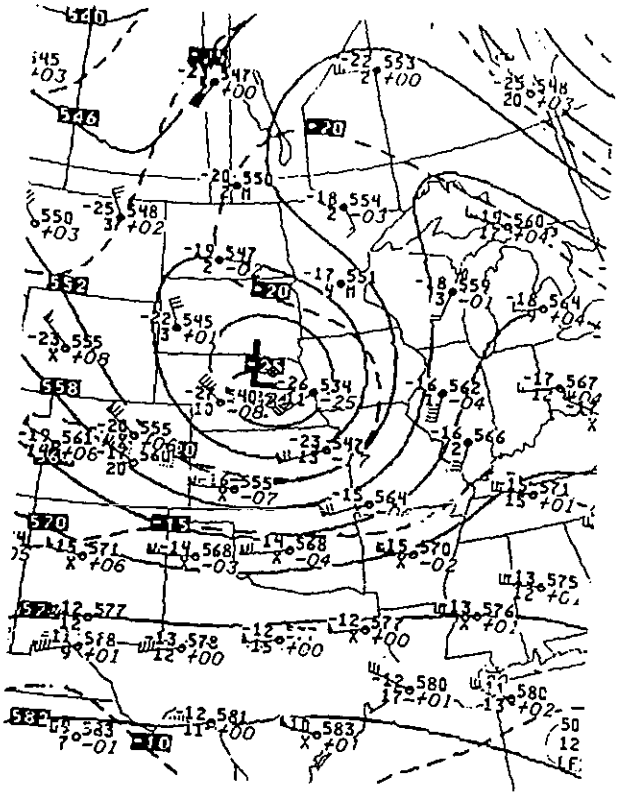
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1612	TORNADO-F2	NE	MINDEN	5	0	0	5
2	2320	TORNADO-F2	OK	BROKEN ARROW	4	0	2	6
3	2345	GUST 95 MPH	OK	MORRIS				
4	2220	GUST 75 MPH	OK	STILLWATER		0	4	4
5	2318	GUST 75 MPH	OK	ROGERS COUNTY		0	1	5



13APR86-14APR86 1612-0145 CST 65 REPORTS 8 TORNADOES

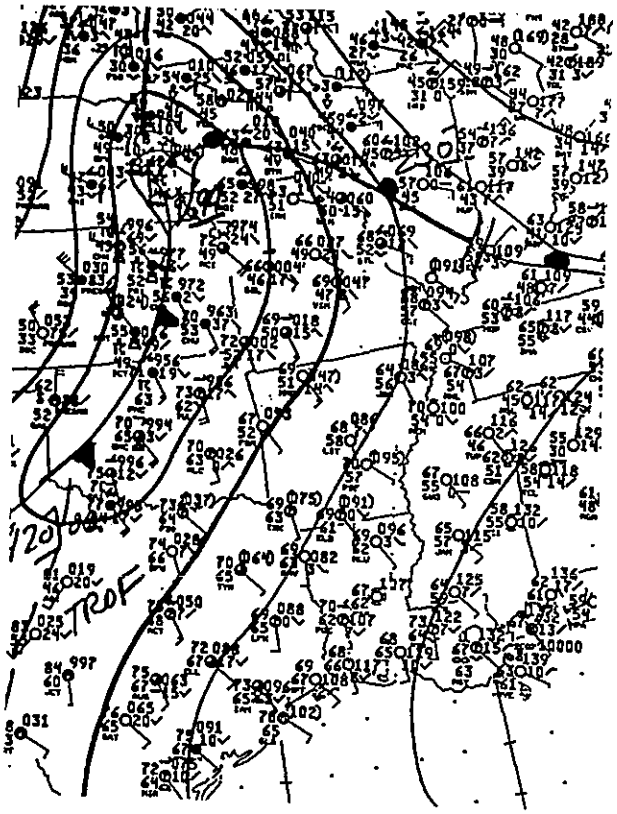


Surface 3PM CST April 13, 1986

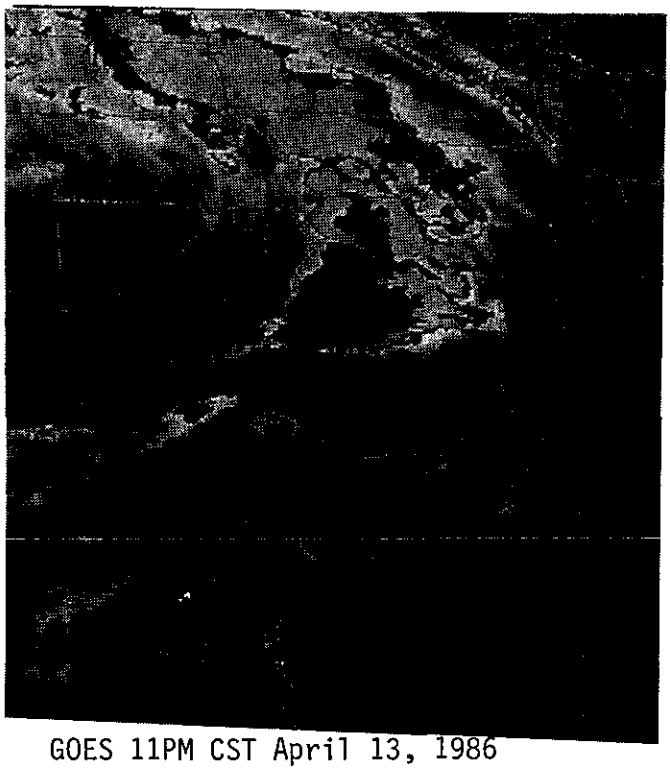


500 MB 6AM CST April 13, 1986

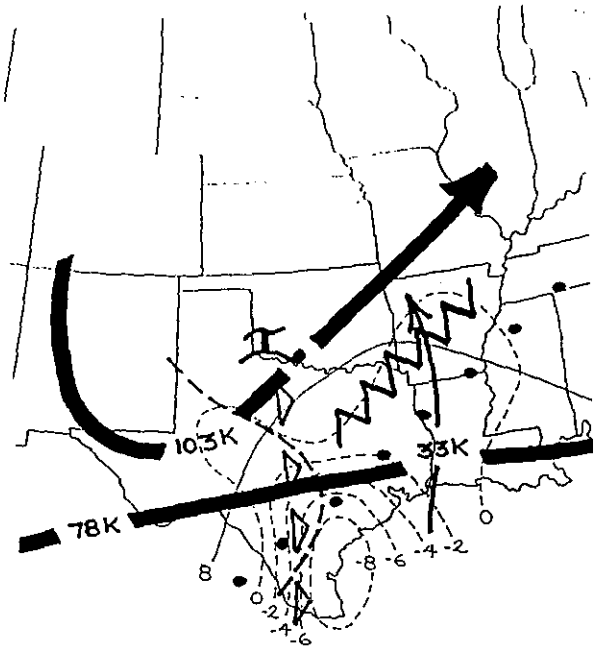
GOES 4PM CST April 13, 1986



Surface 9PM CST April 13, 1986

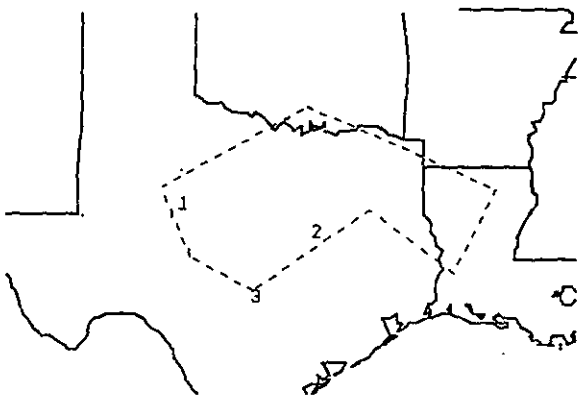


GOES 11PM CST April 13, 1986

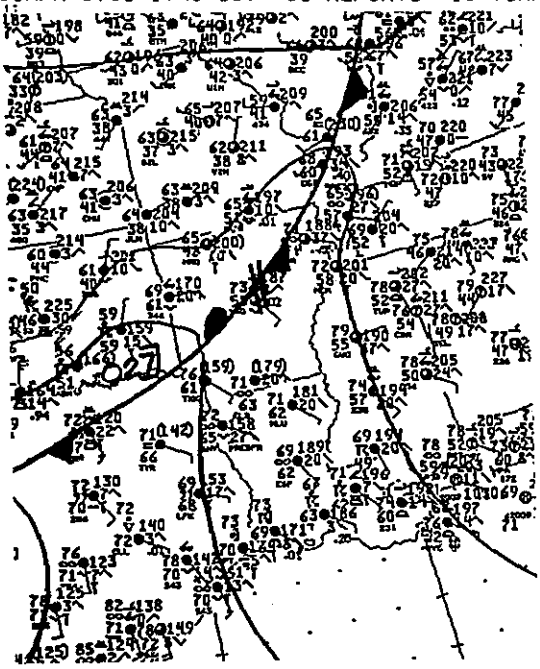


Composite 6PM CST April 19, 1986

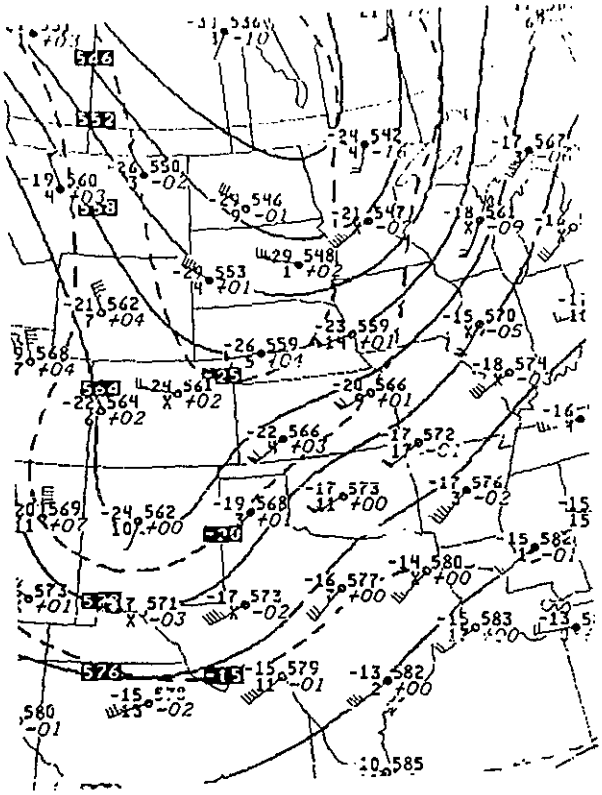
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	0715	TORNADO-F3	TX	SWEETWATER	4.5	1	100	7
2	1340	TORNADO-F1	TX	MOUNT CALM			2	5
3	1617	TORNADO-F1	TX	SANDY			2	5



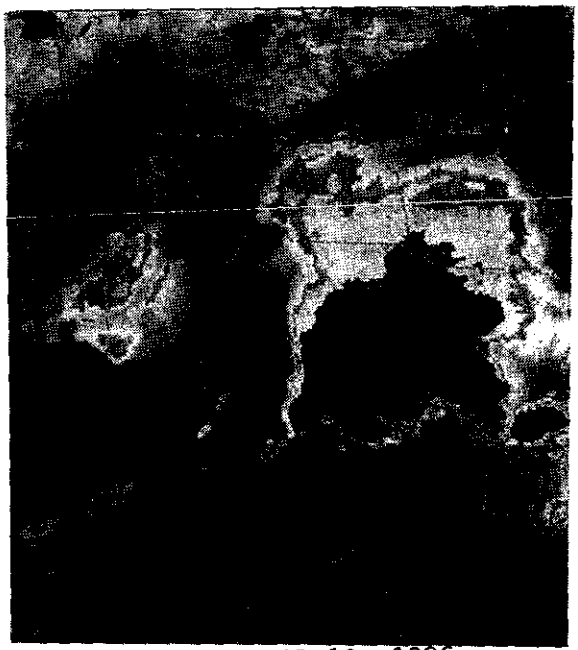
19APR 0715-1745 CST 88 REPORTS 11 TORNADOES



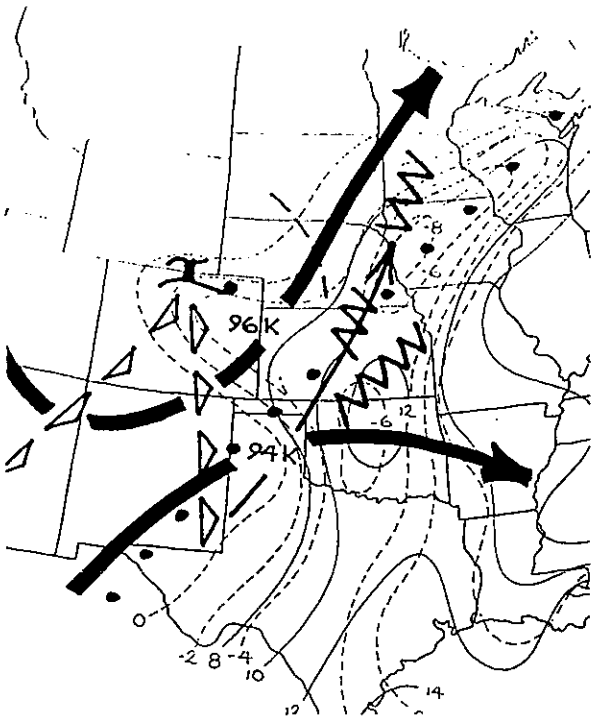
Surface 3PM CST April 19, 1986



500MB CST 6AM CST April 19, 1986

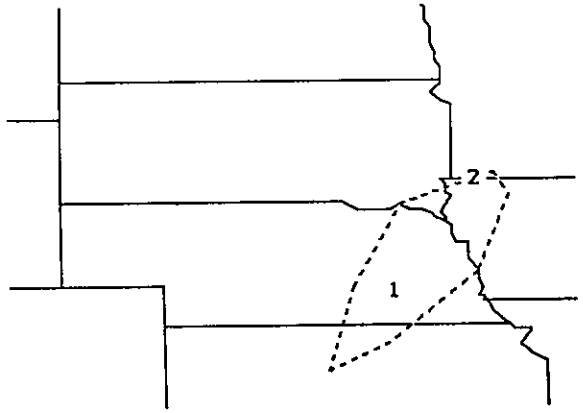


GOES 3PM CST April 19, 1986

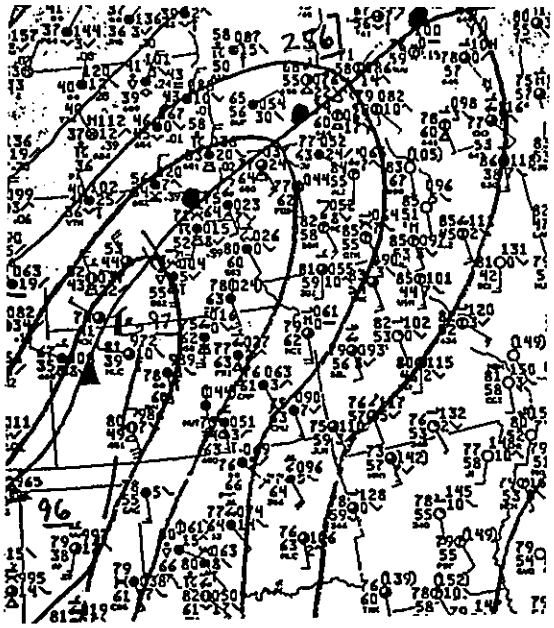


Composite 6 AM CST April 26, 1986

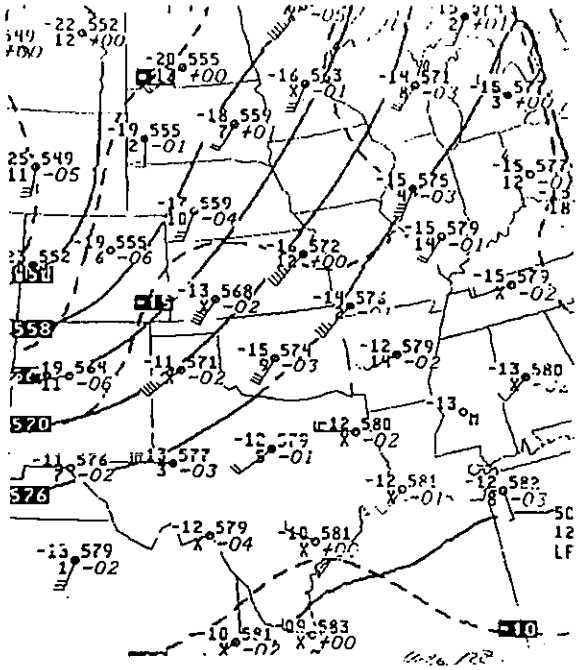
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1625	3.00 INCH HAIL	NE	BENEDICT				
2	1830	TORNADO-F2	MN	RUSHMORE	18	0	2	6



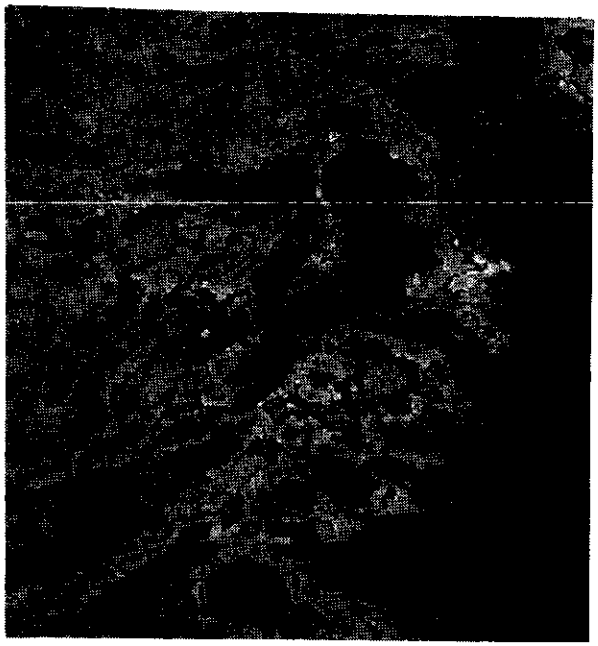
26APR86 1510-2125 CST 37 REPORTS 10 TORNADOES



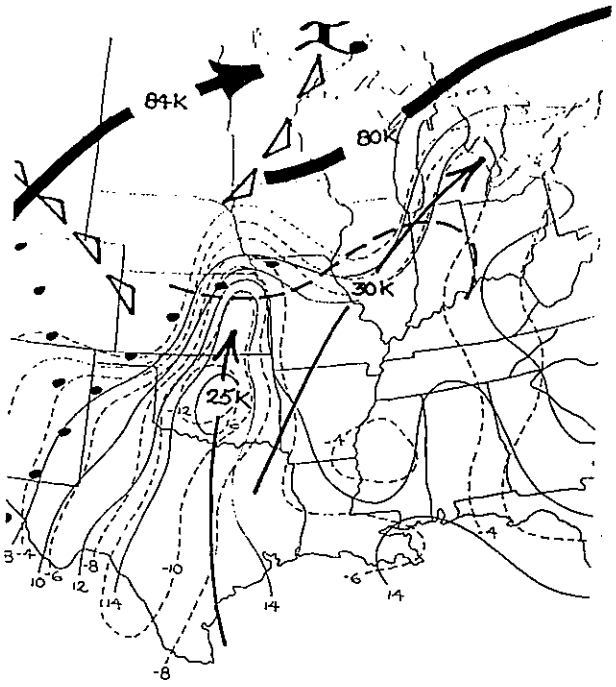
Surface 6PM CST April 26, 1986



500 MB 6AM CST April 26, 1986

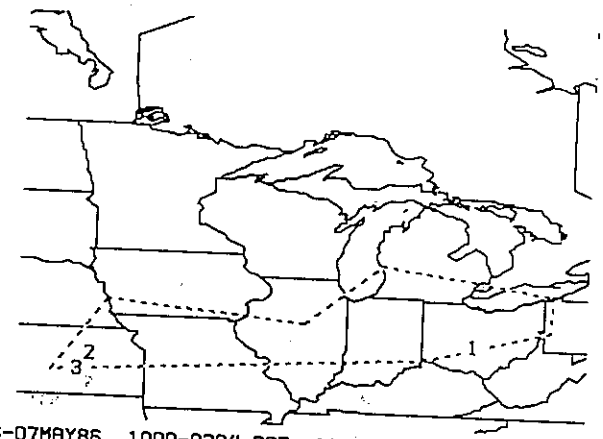


GOES 6:30PM CST April 26, 1986

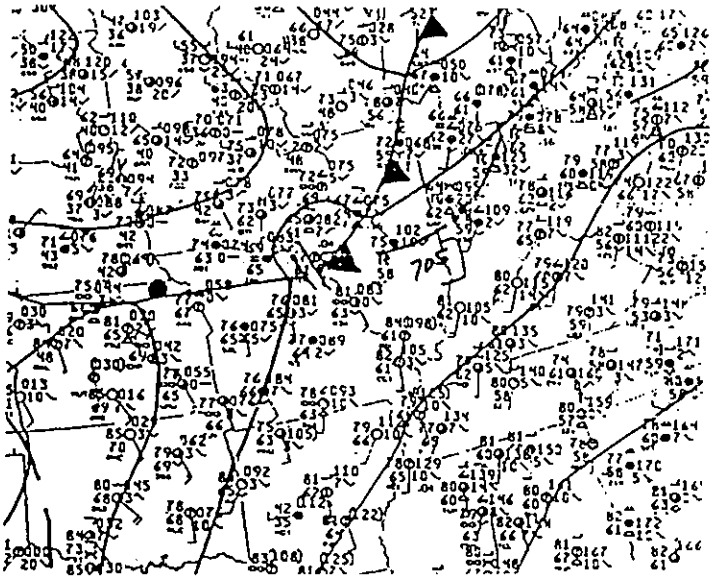


Composite 6PM CST May 6, 1986

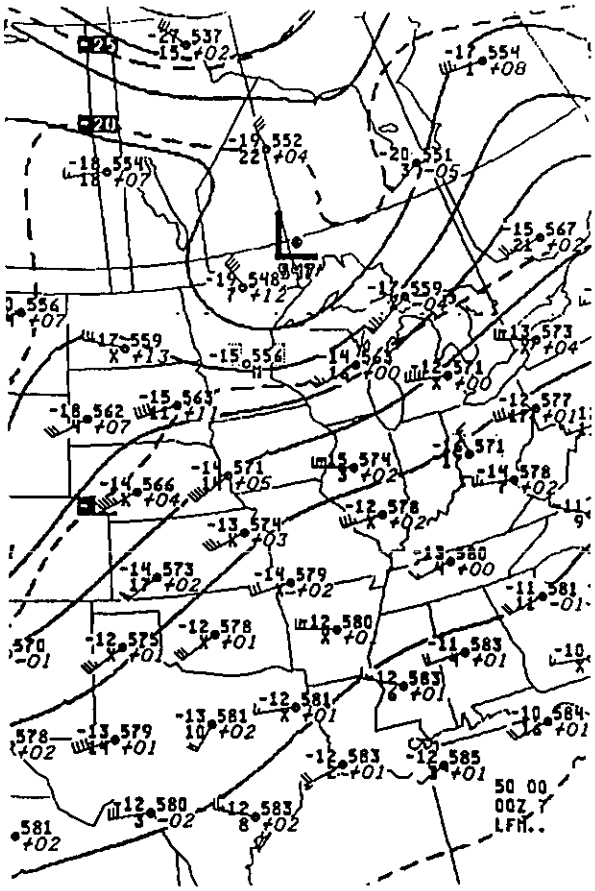
1 2000 CST GUST 80 MPH FRANKLIN COUNTY OH
2 2000 CST 3.00 INCH HAIL 2 S MARSHALL FIELD KS
3 2003-2030 CST TORNADO-F1 WHITE CITY - DWIGHT KS (13 MI)



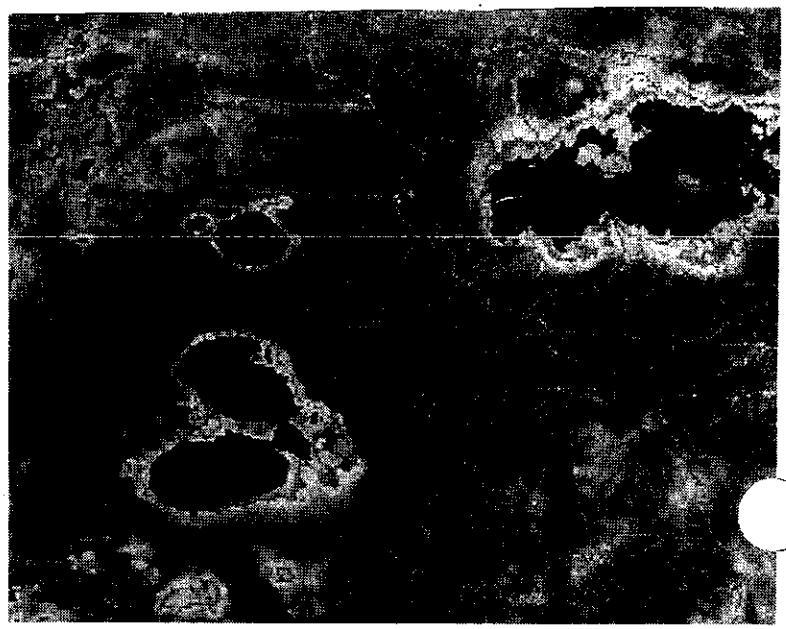
06MAY86-07MAY86 1000-0204 CST 114 REPORTS 1 TORNADO



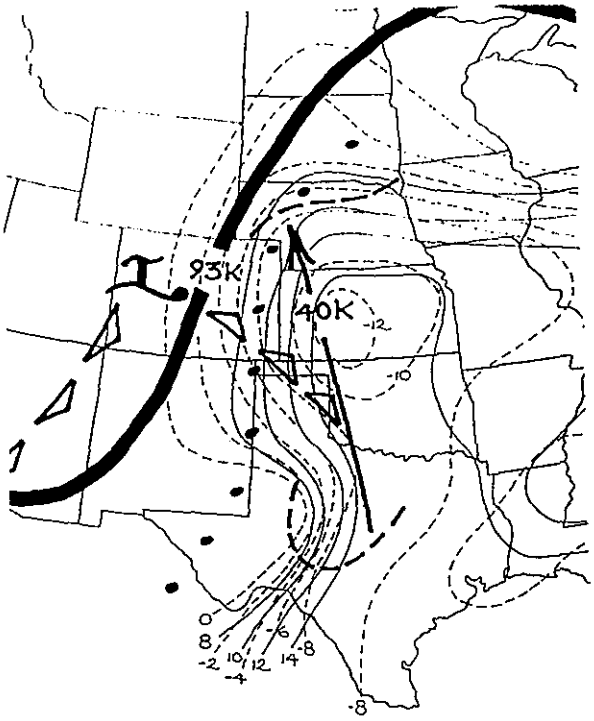
Surface 6PM CST May 6, 1986



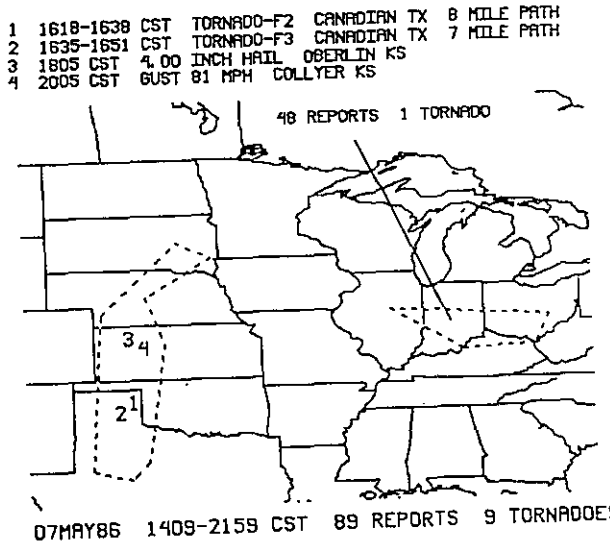
500 MB 6PM CST May 6, 1986

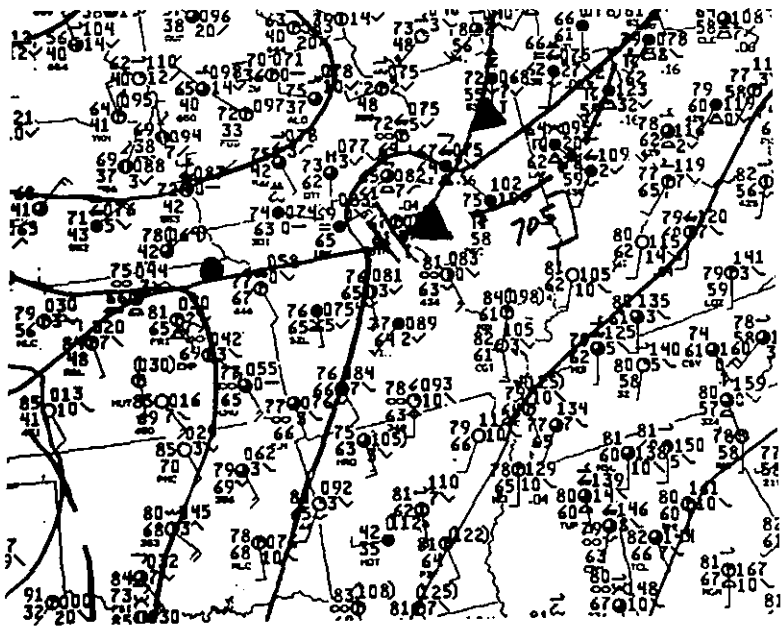


GOES 8PM CST May 6, 1986

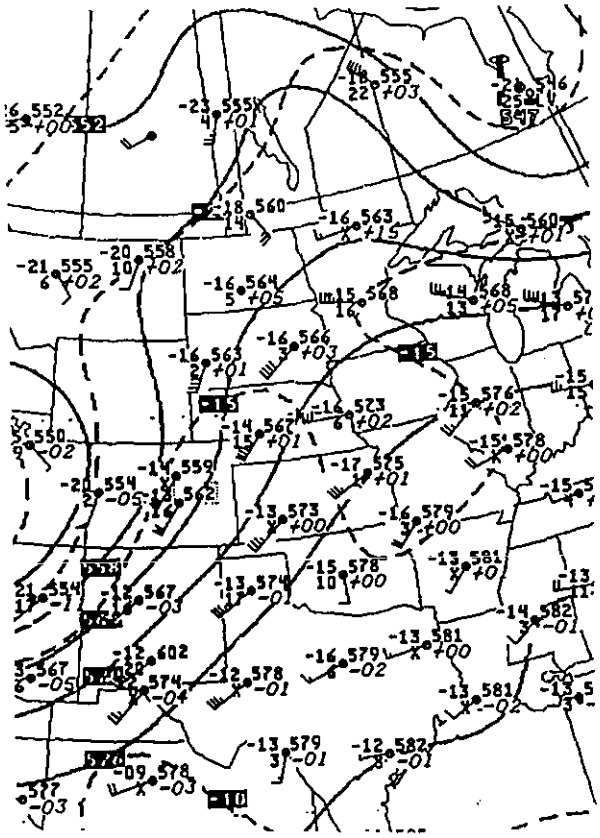


Composite 6PM CST May 7, 1986

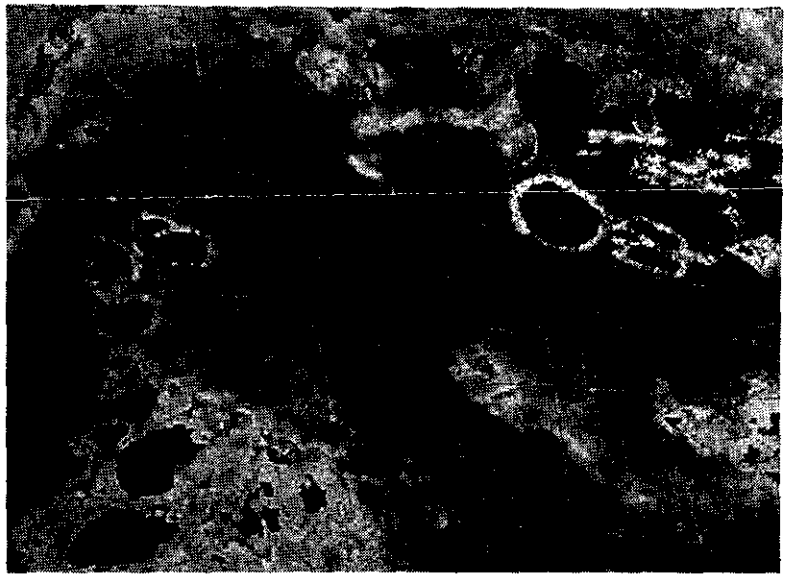




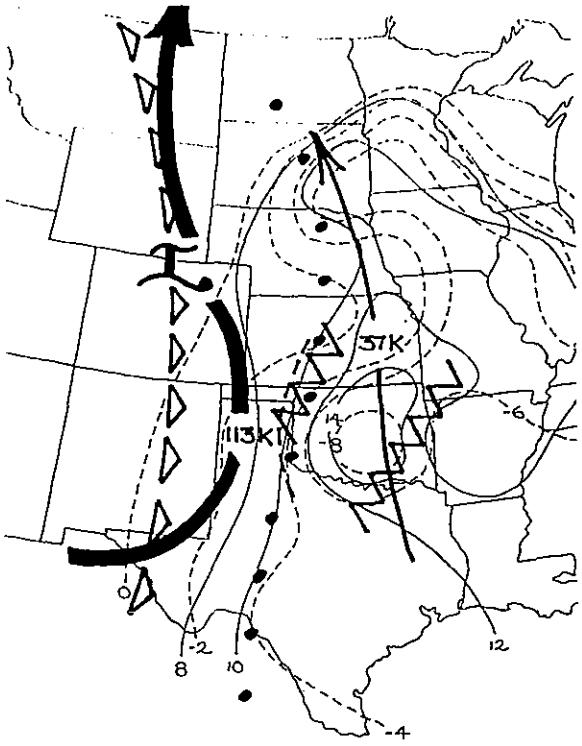
Surface 3PM CST May 7, 1986



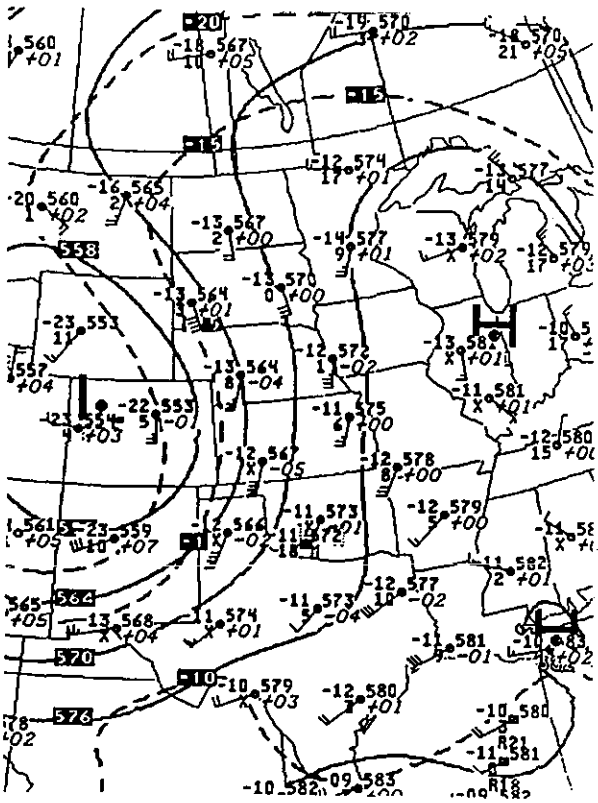
500 MB 6AM CST May 7, 1986



GOES 4PM CST May 7, 1986

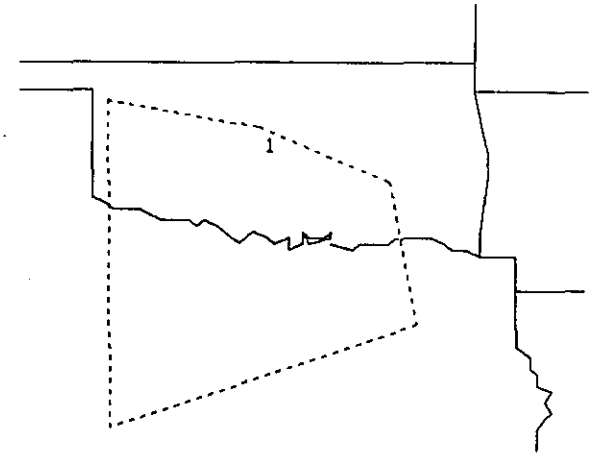


Composite 6PM May 8, 1986

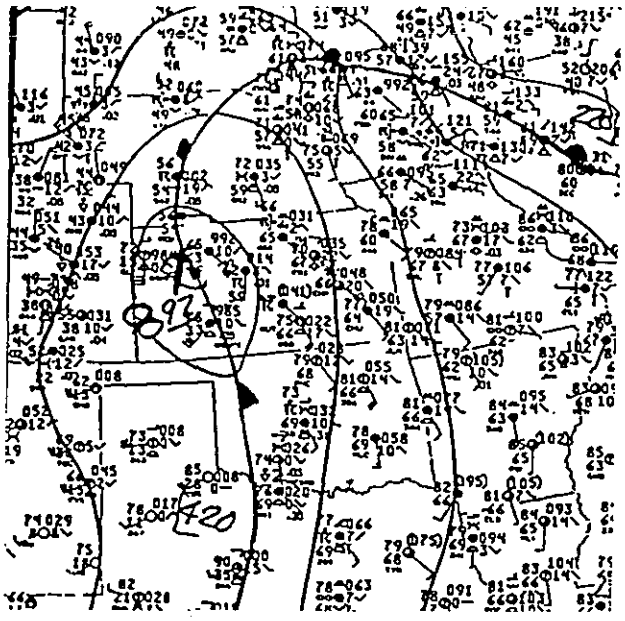


500 MB 6PM CST May 8, 1986

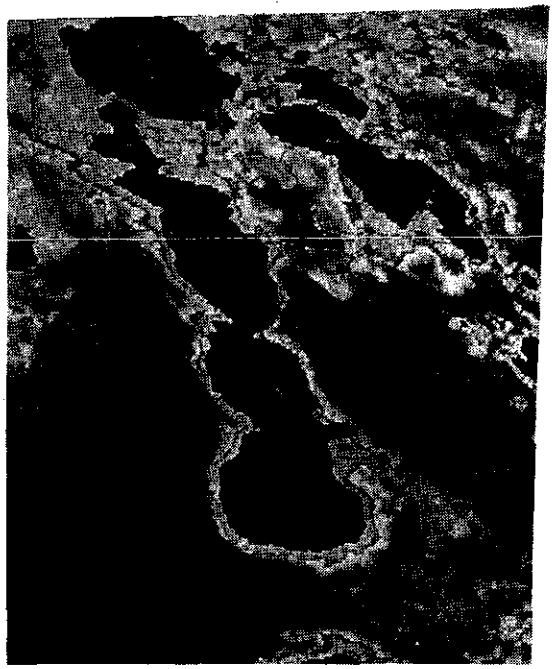
1 1812-1821 CST TORNADO-F3 EDMOND OK 15 INJ $6.5 MIL DMG



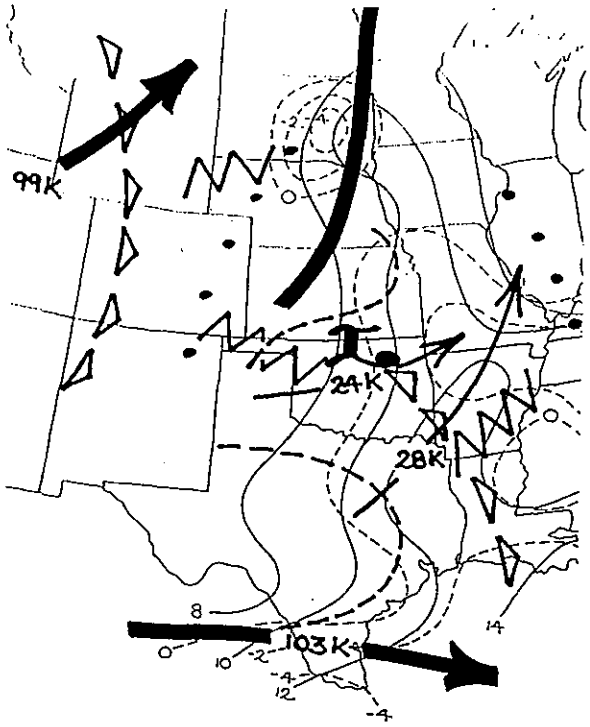
08MAY86 1325-2228 CST 48 REPORTS 4 TORNADOES



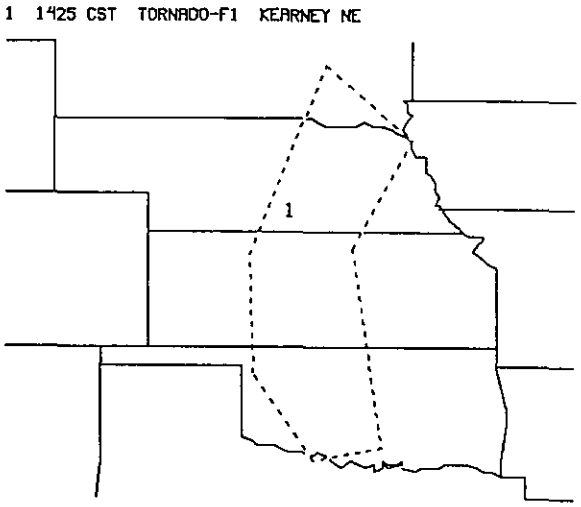
Surface 6PM CST May 8, 1986



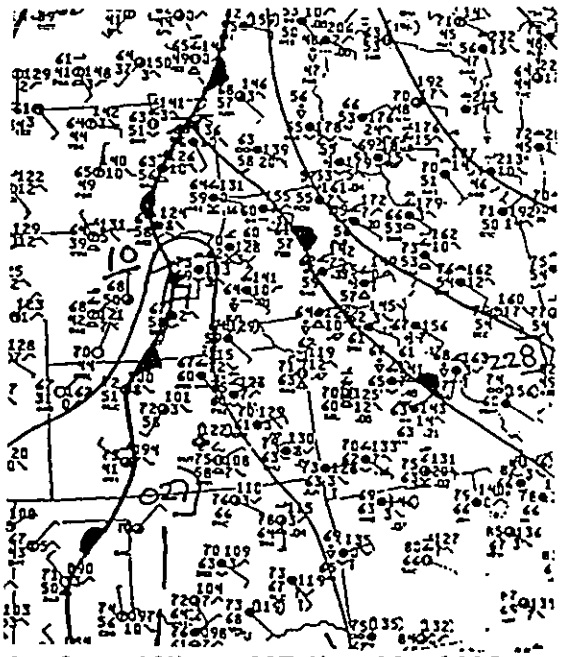
GOES 6PM CST May 8, 1986



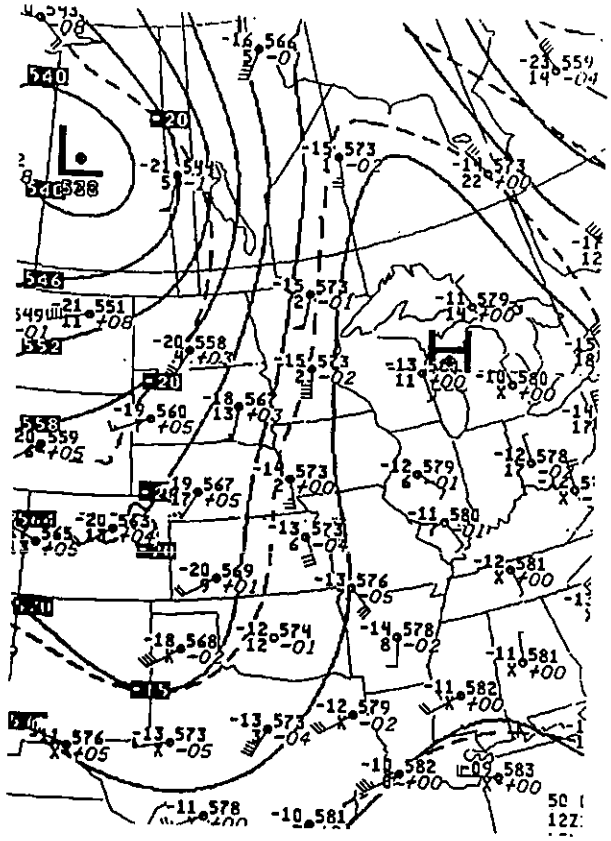
Composite 6PM CST May 10, 1986



10MAY86 1010-2240 CST 48 REPORTS 8 TORNADOES

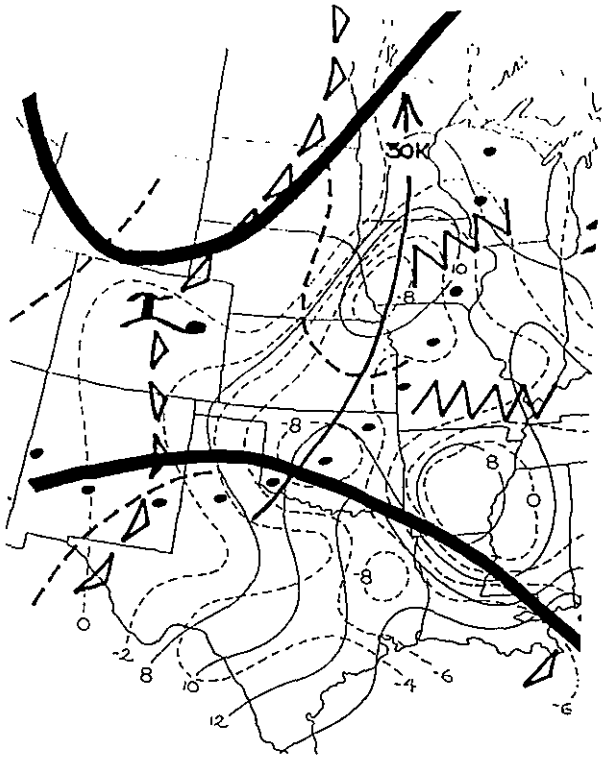


Surface 12Noon CST May 10, 1986



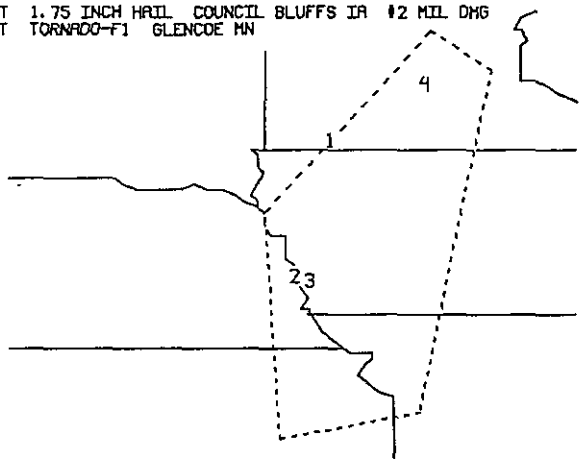
500 MB 6AM CST May 10, 1986

GOES 3:01PM CST May 10, 1986

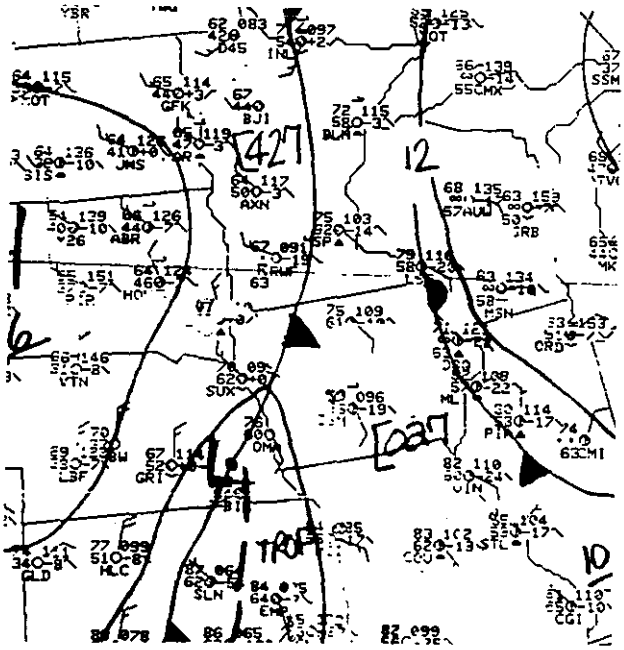


Composite 6PM CST May 12, 1986

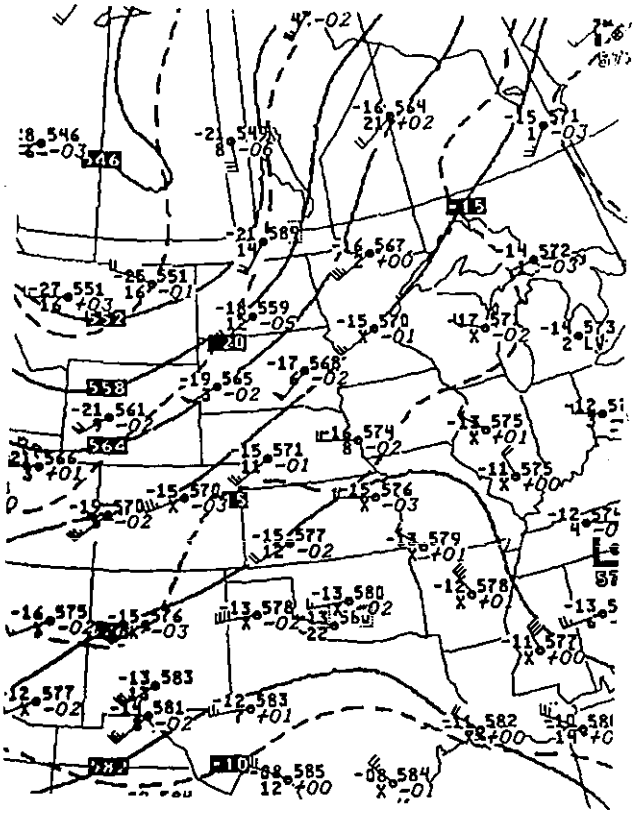
1 1435 CST 4.00 INCH HAIL WORHINGTON MN #5 MIL DMG
2 1550 CST 2.50 INCH HAIL OMAHA NE #5 MIL DMG
3 1645 CST 1.75 INCH HAIL COUNCIL BLUFFS IA #2 MIL DMG
4 1615 CST TORNADO-F1 GLENCOE MN



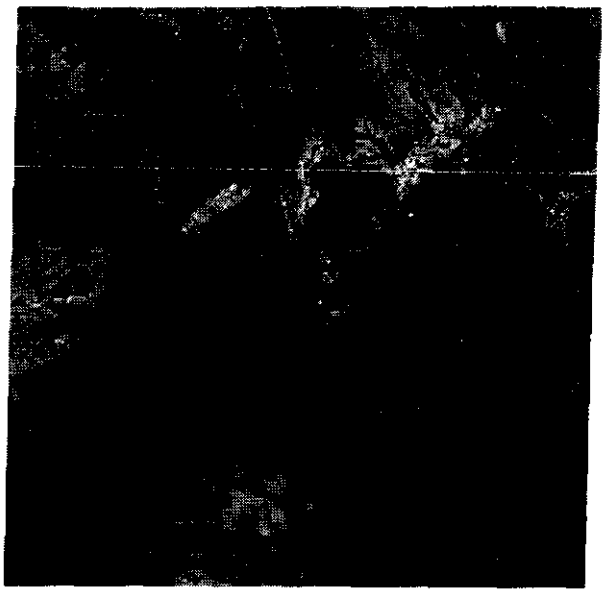
12MAY86-13MAY86 1430-0030 CST 56 REPORTS 2 TORNADOES



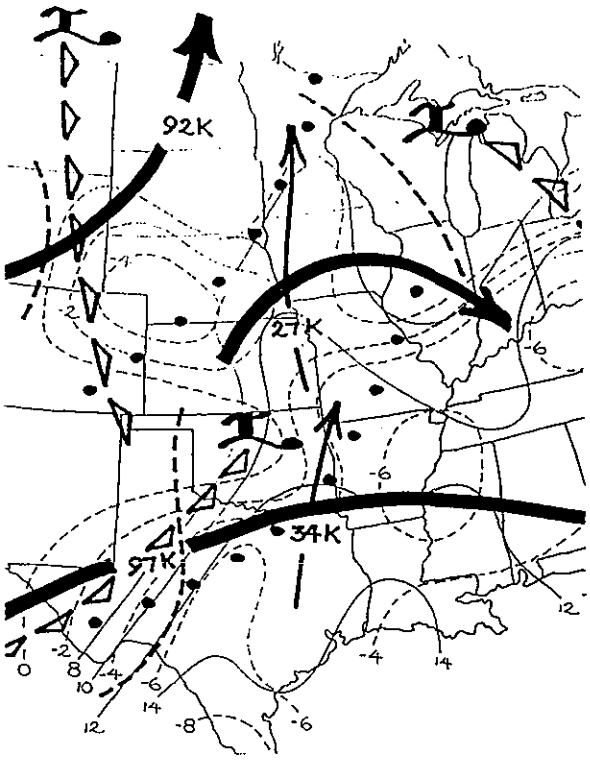
Surface 3PM CST May 12, 1986



500 MB 6AM CST May 12, 1986

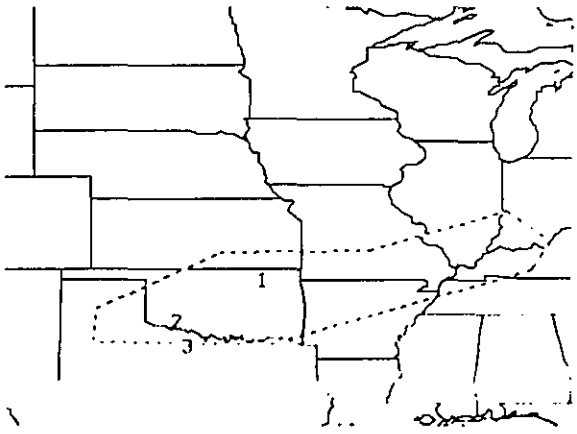


GOES 4:01PM CST May 12, 1986

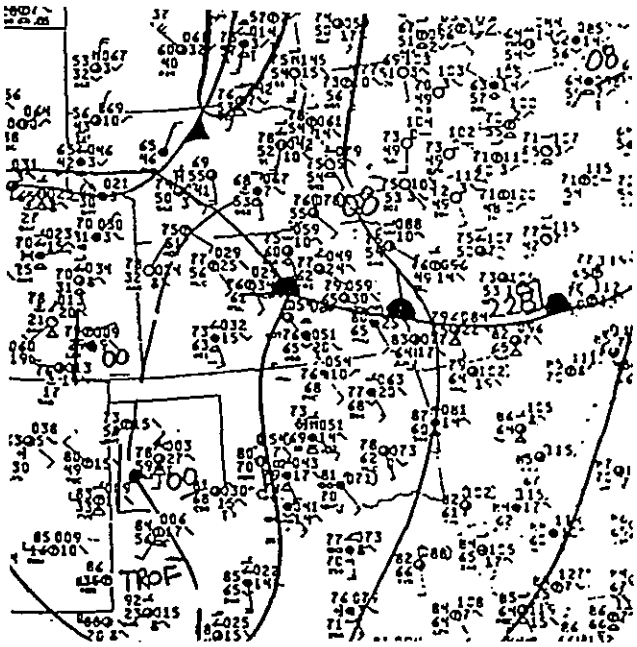


Composite 6PM CST May 14, 1986

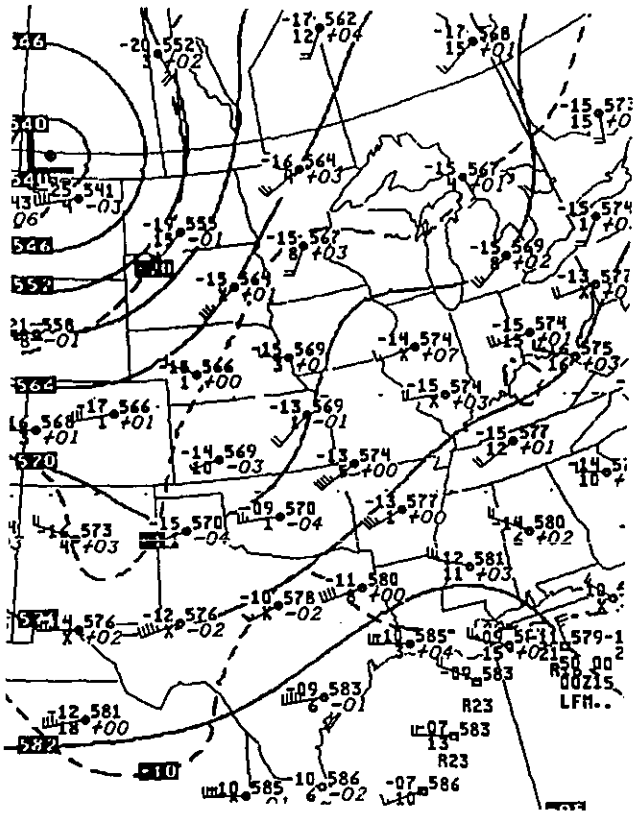
1 1148 CST 4.50 INCH HAIL WASHINGTON COUNTY OK
2 1509-1515 CST TORNADO-F2 2 S SNYDER OK
3 1830 CST TORNADO-F3 ARCHER CITY TX 4 INJ $3.5 MIL DMG



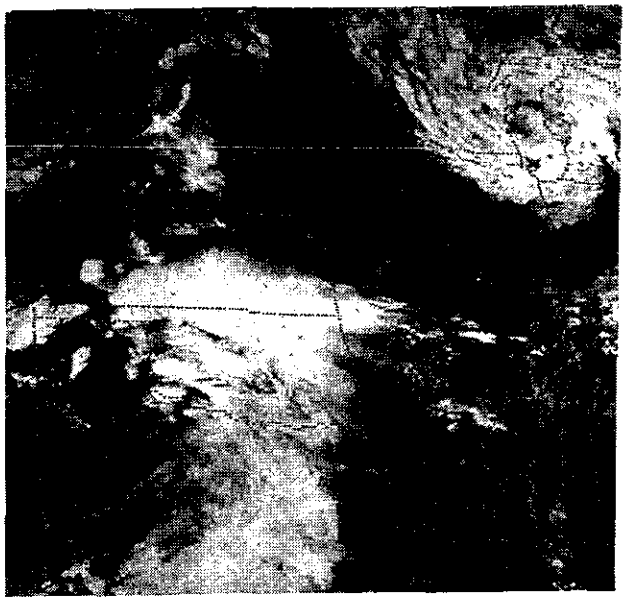
14MAY86-15MAY86 0905-0120 CST 162 REPORTS 16 TORNADOES



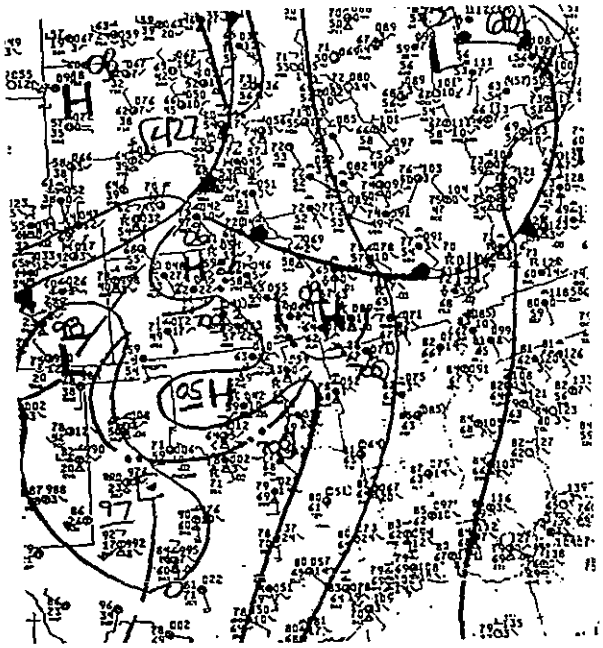
Surface 12Noon CST May 14, 1986



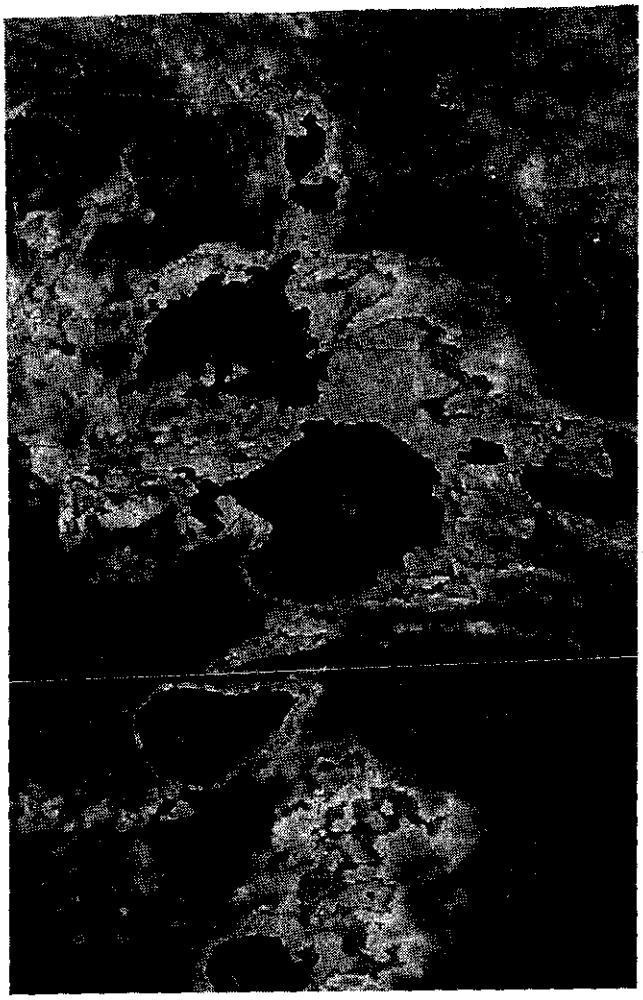
500 MB 6PM CST May 14, 1986



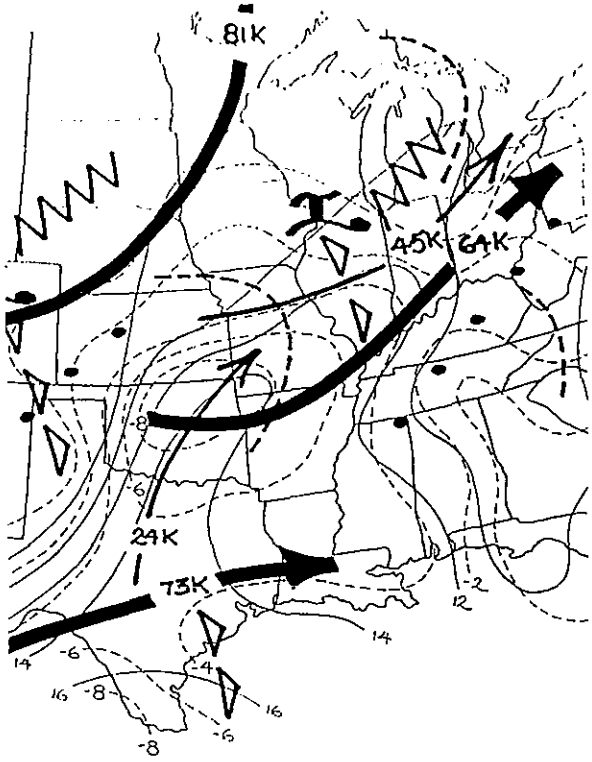
GOES 12:30PM CST May 14, 1986



Surface 6 PM CST May 14, 1986

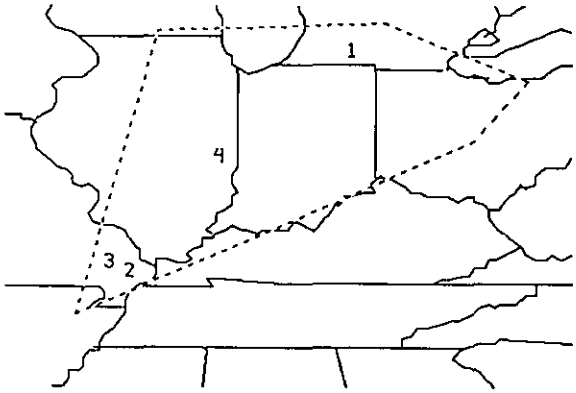


GOES 6:30 PM CST May 14, 1986

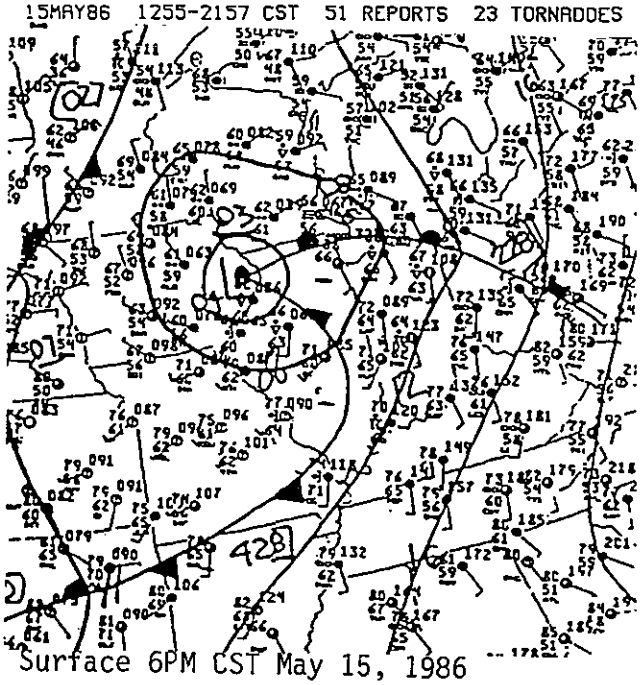


Composite 6PM CST May 15, 1986

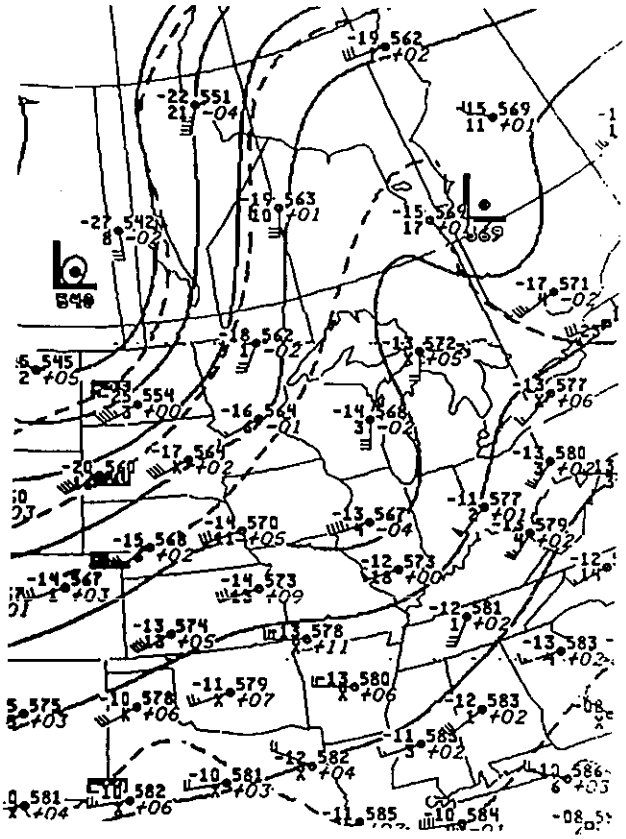
1 1654 CST TORNADO-F3 COLDWATER MI #1.6 MIL DMG
2 1730 CST TORNADO-F2 SIKESTON MO 19 INJ #5 MIL DMG
3 1830 CST TORNADO-F2 VANDUSER MO 1 KIL 15 INJ
4 1900-1940 CST GUST 92 MPH EDGAR COUNTY IL



15MAY86 1255-2157 CST 51 REPORTS 23 TORNADOES

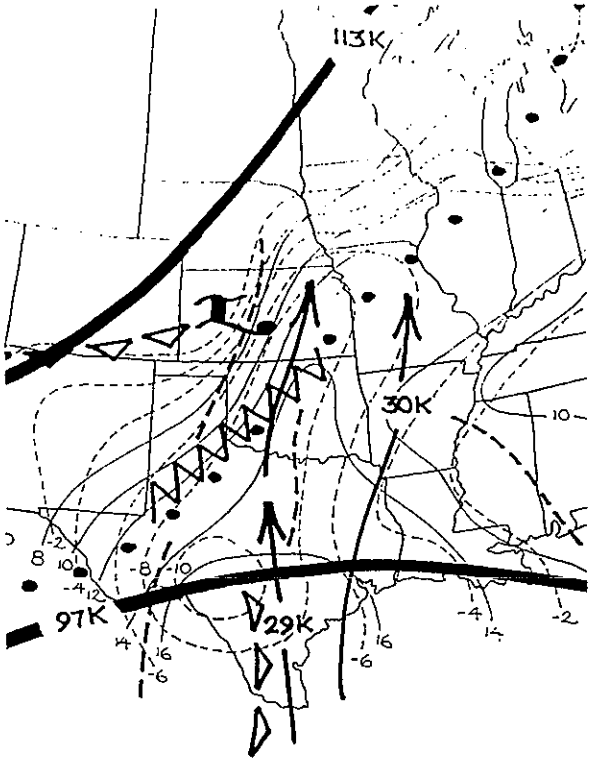


Surface 6PM CST May 15, 1986

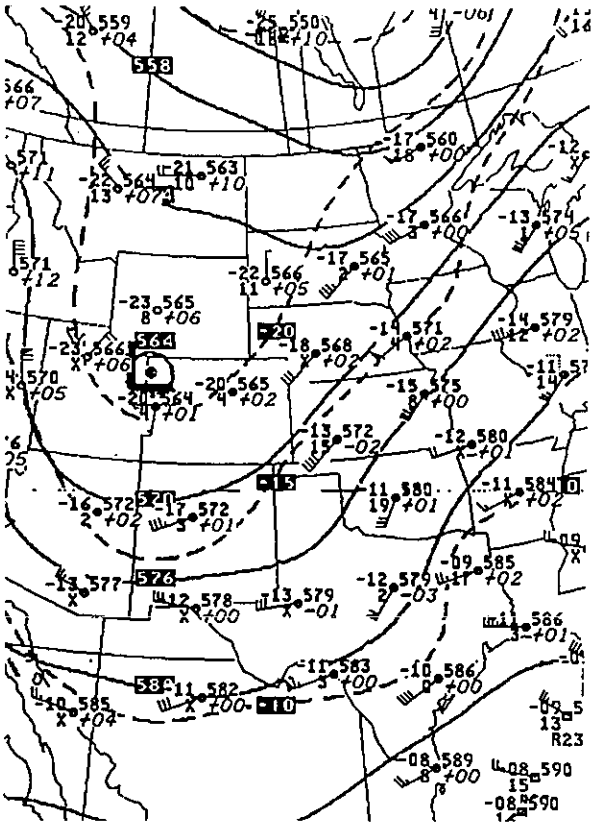


500 MB 6PM CST May 15, 1986

GOES 6PM CST May 15, 1986



Composite 6PM CST May 16, 1986



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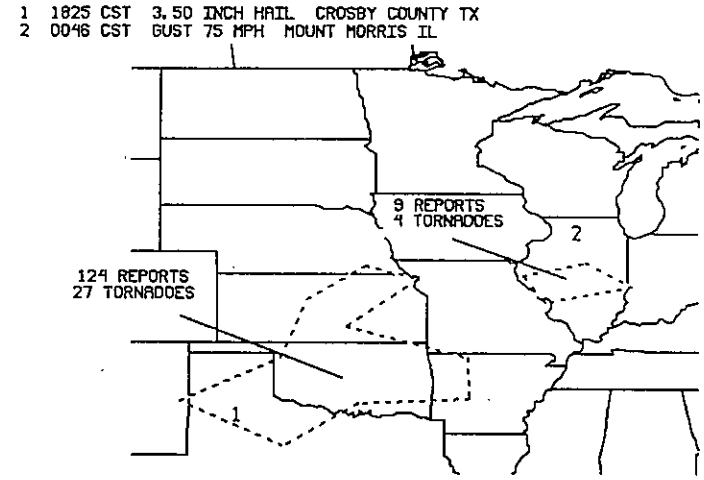
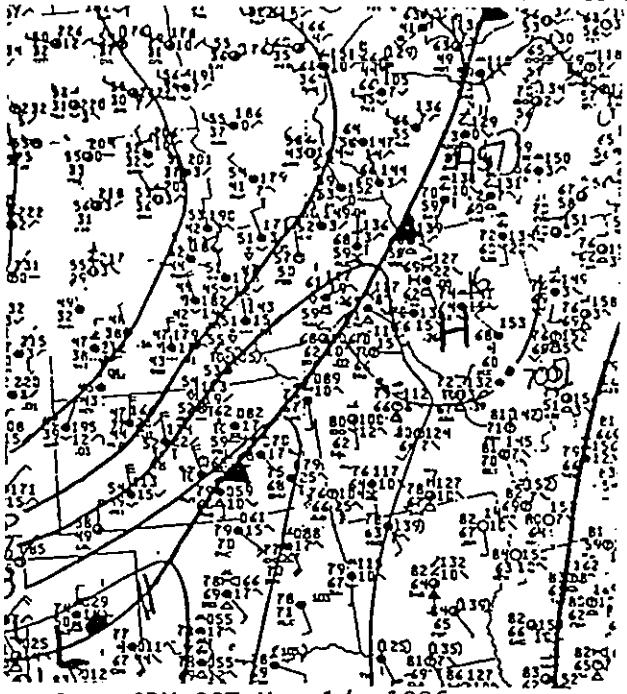
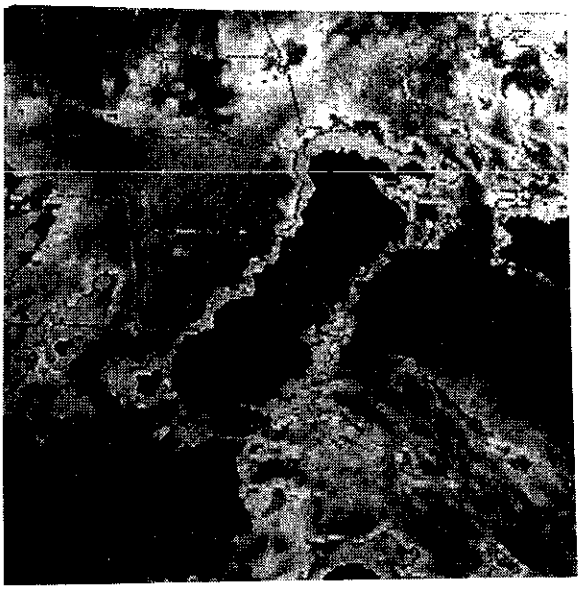
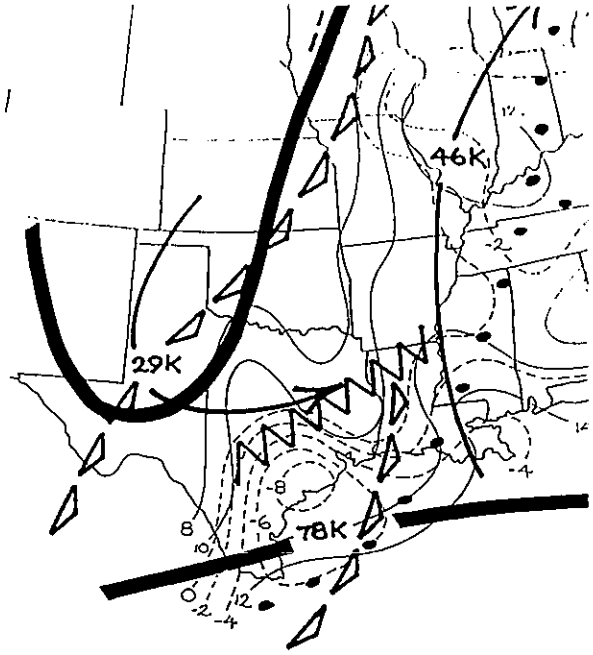




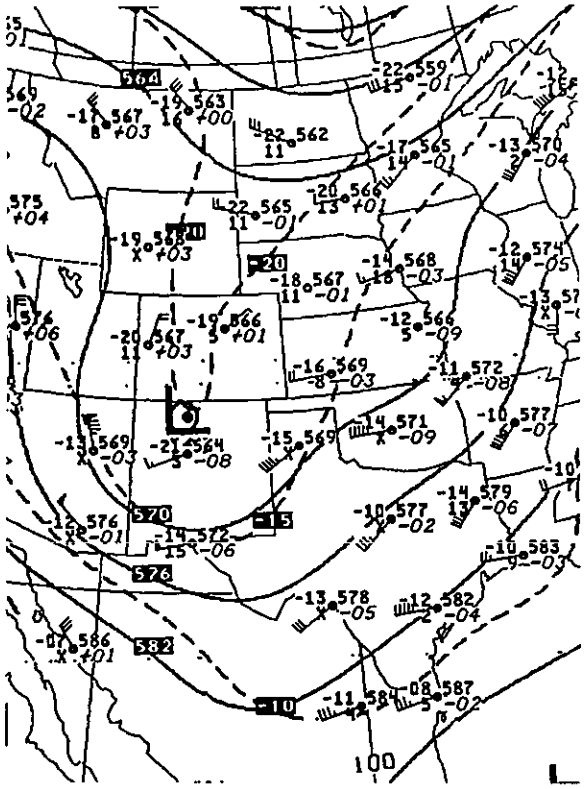
Surface 6PM CST May 16, 1986



GOES 6PM CST May 16, 1986



Composite 6PM CST May 17, 1986



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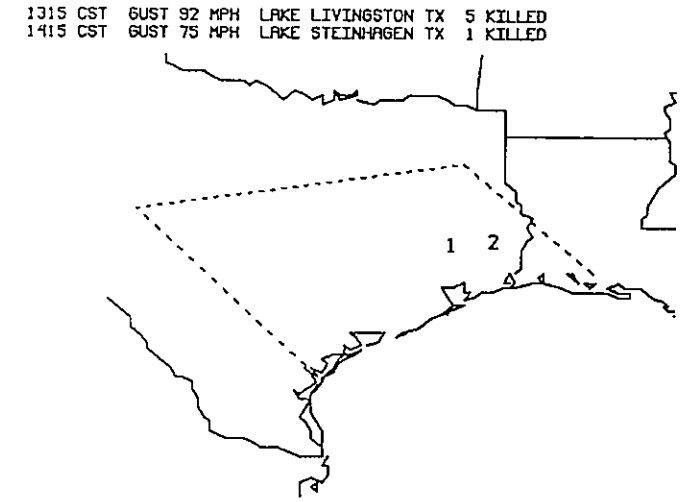
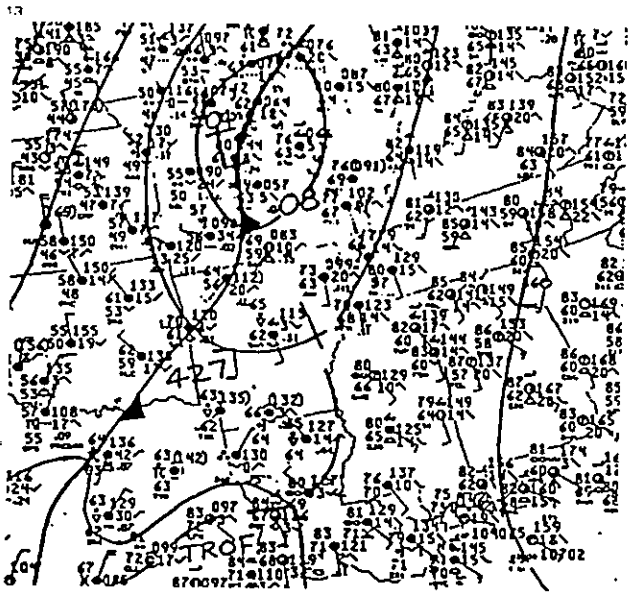
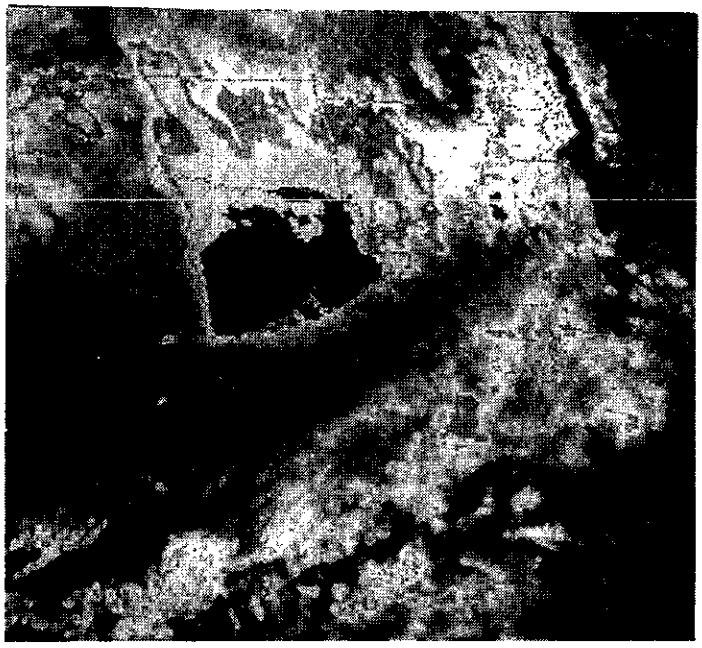
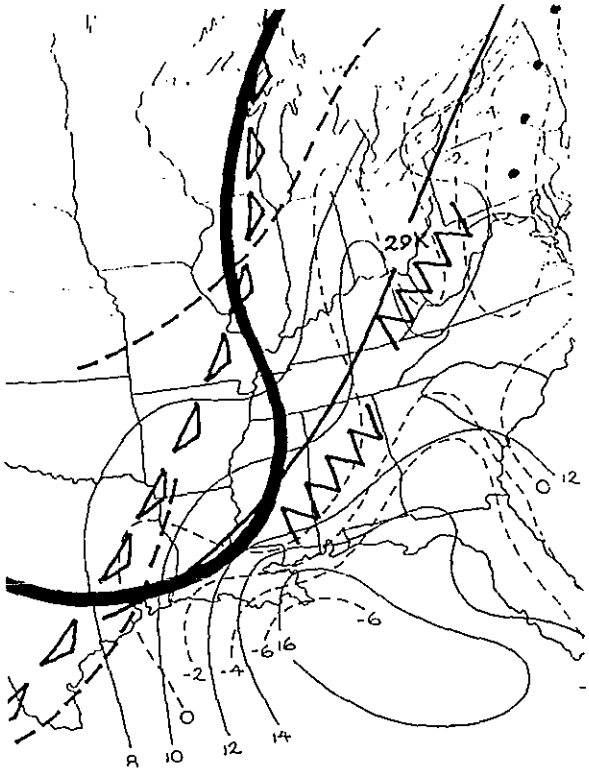




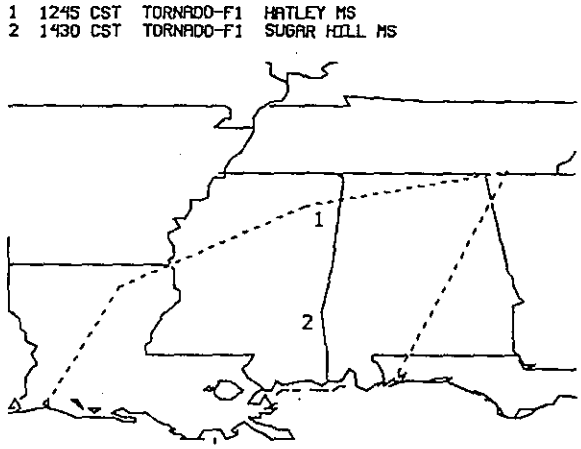
Surface 12 Noon CST May 17, 1986



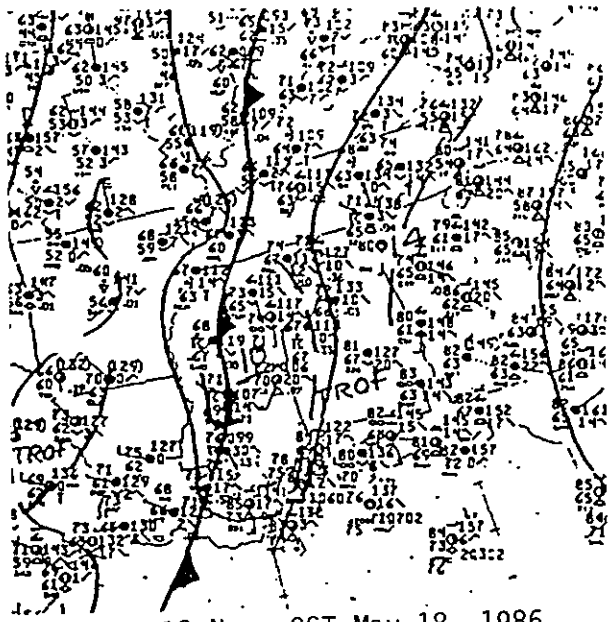
GOES 1PM CST May 17, 1986



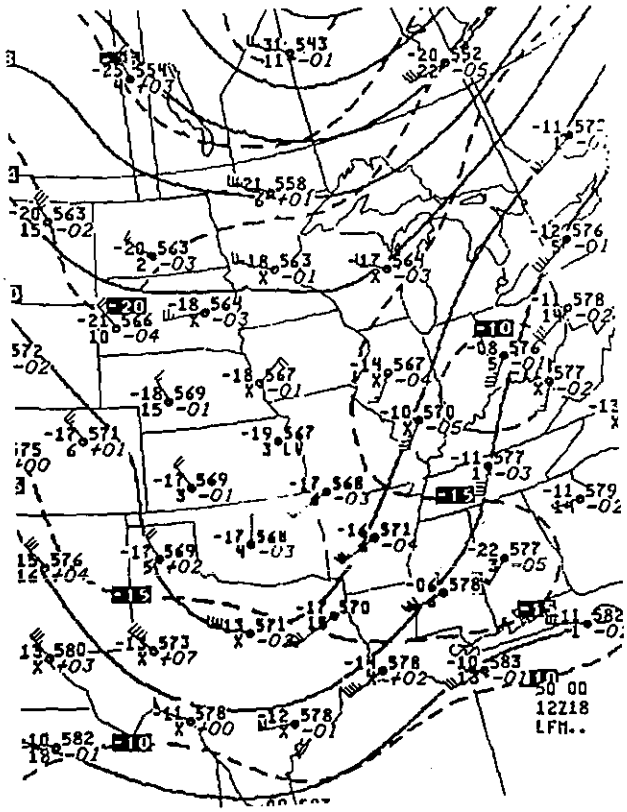
Composite 6PM CST May 18, 1986



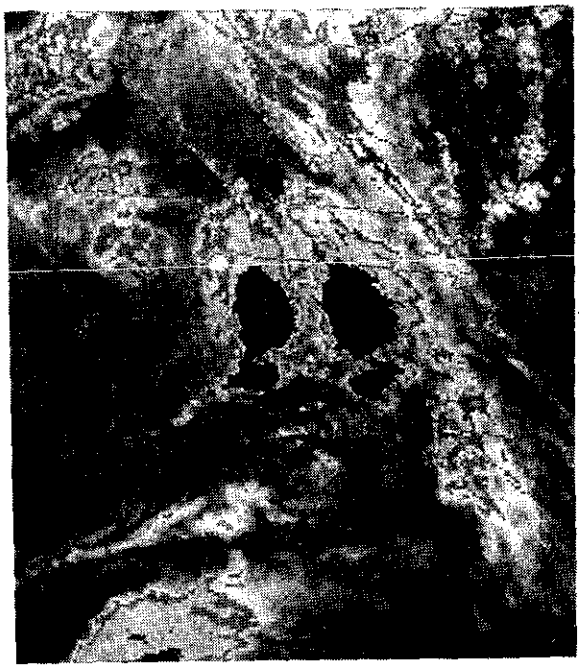
18MAY86 0835-1740 CST 43 REPORTS 3 TORNADOES



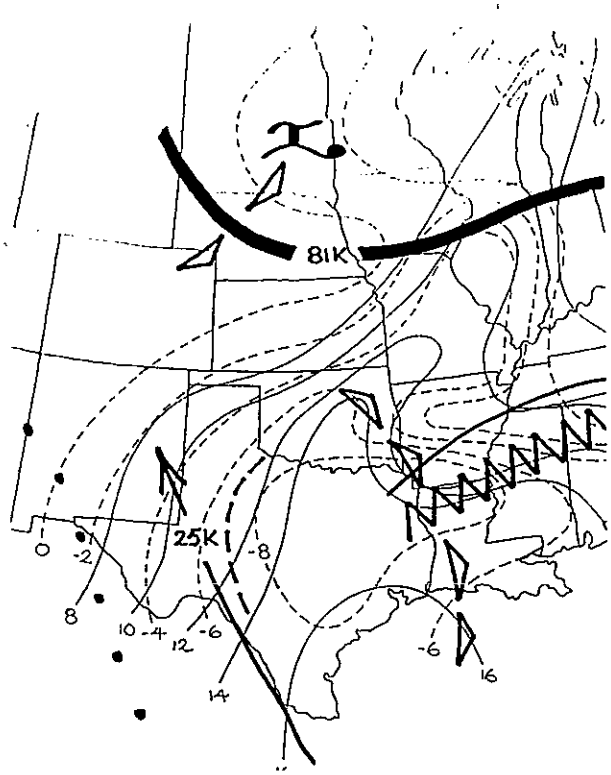
Surface 12 Noon CST May 18, 1986



500 MB 6AM CST May 18, 1986

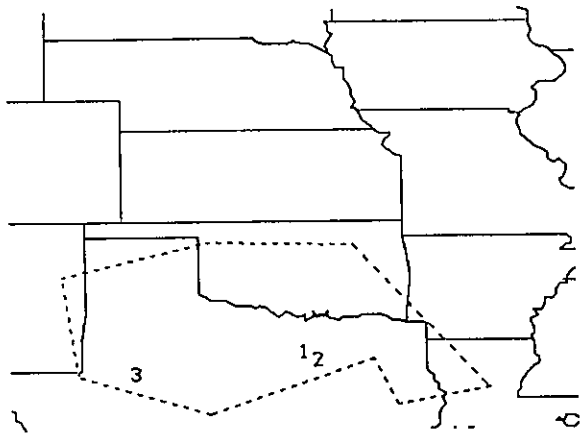


GOES 12 Noon CST May 18, 1986

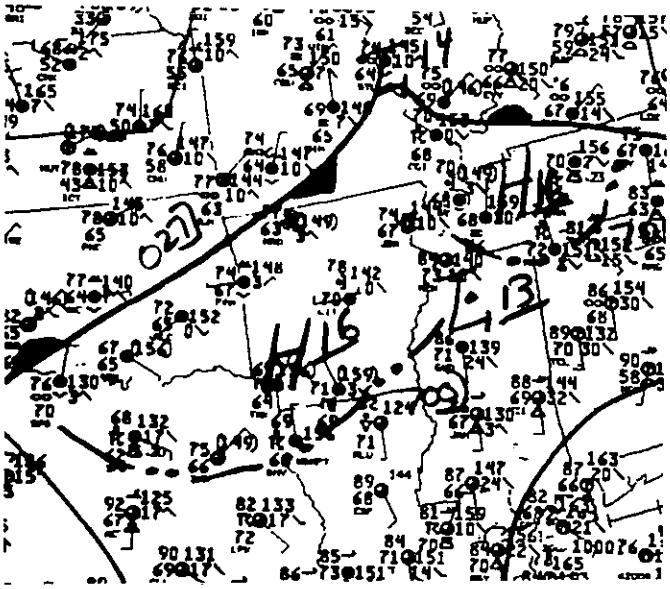


Composite 6PM CST May 24, 1986

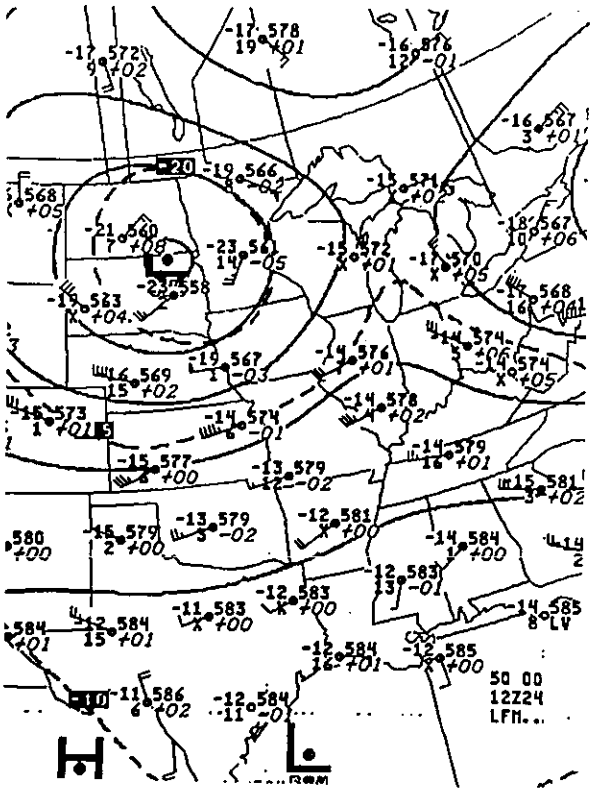
1 1440 CST GUST 95 MPH FORT WORTH TX 14 INJ $2 MIL DMG
2 1445 CST 3.00 INCH HAIL ARLINGTON TX
3 1940 CST 2.75 INCH HAIL STANTON TX $2 MIL DMG



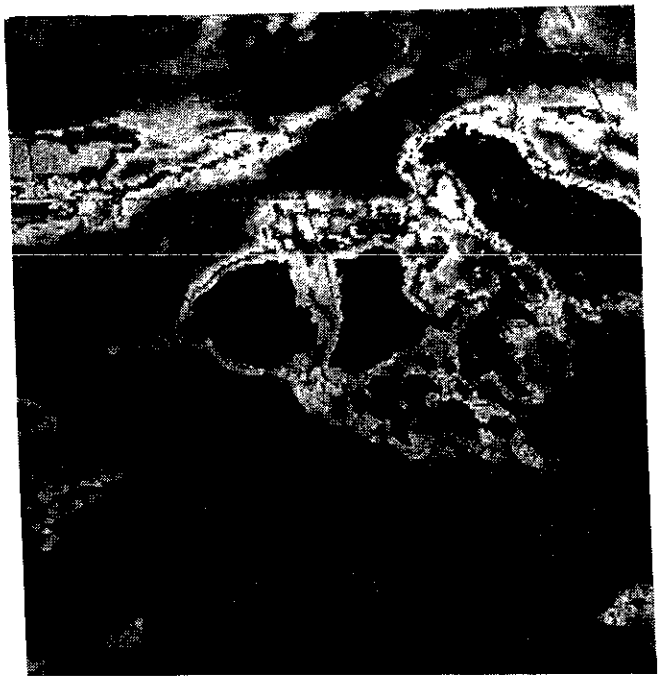
24MAY86 0600-2333 CST 59 REPORTS 3 TORNADOES



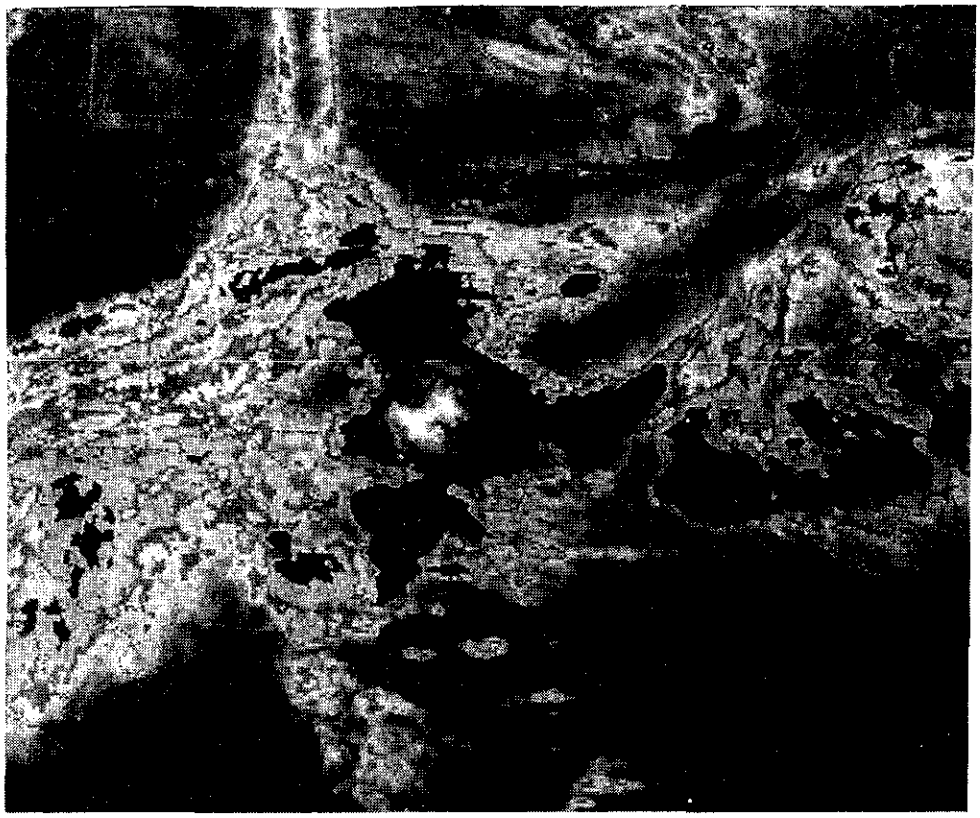
Surface 3PM CST May 24, 1986



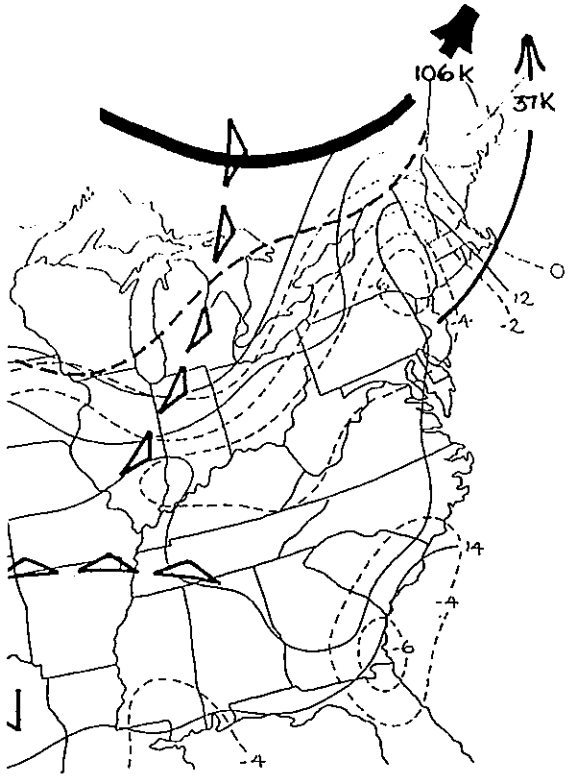
500 MB 6AM CST May 24, 1986



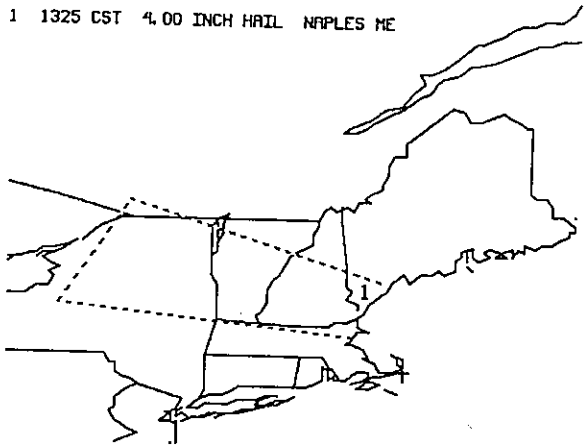
GOES 3:01PM CST May 24, 1986



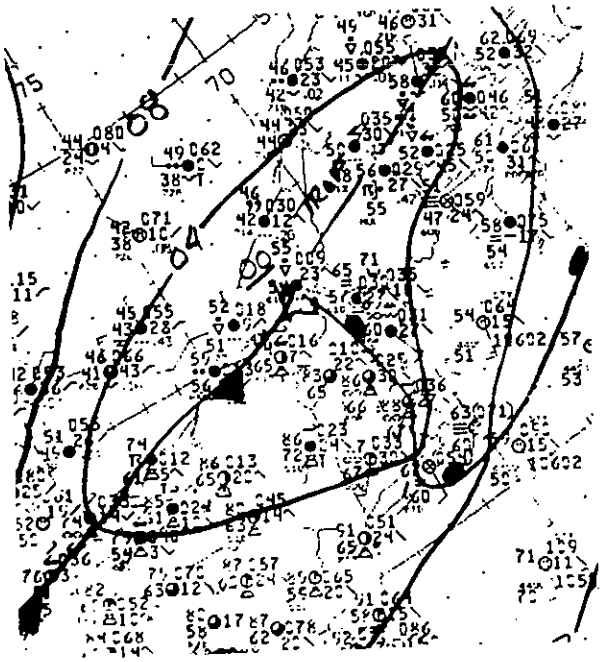
GOES 7:30PM CST May 24, 1986



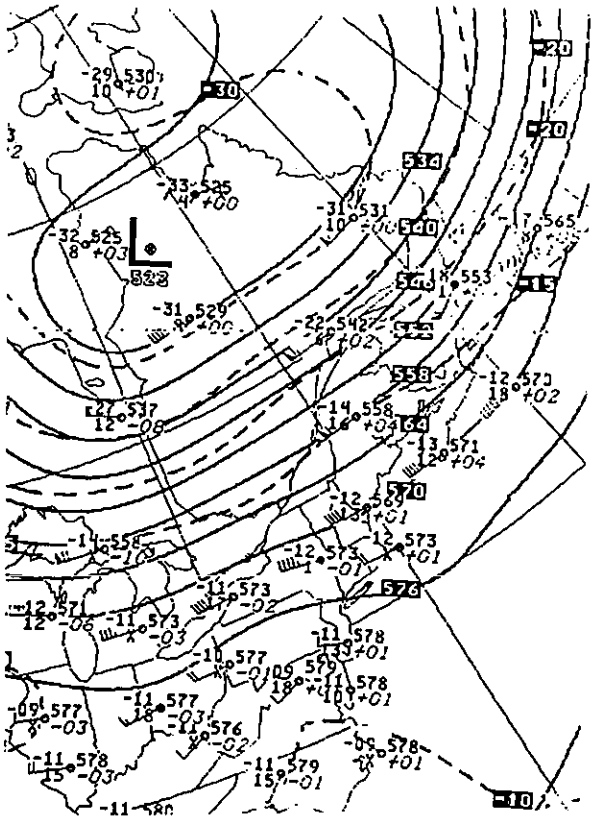
Composite 6PM CST June 1, 1986



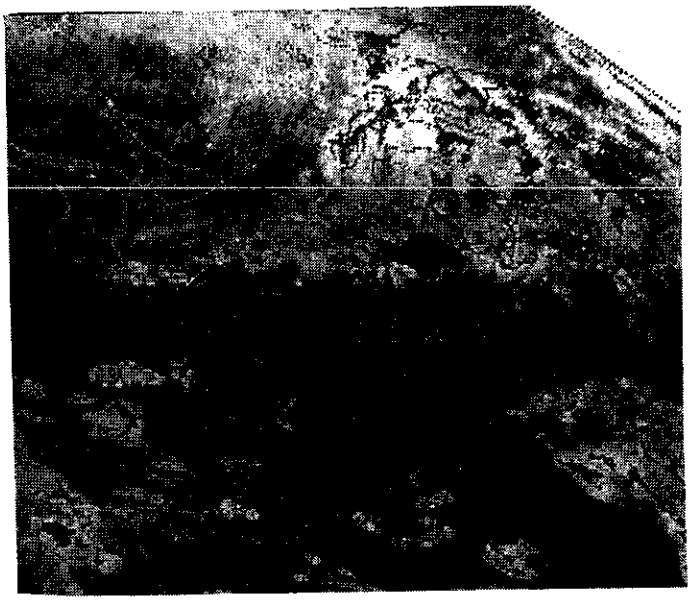
01JUN86 0900-1800 CST 56 REPORTS



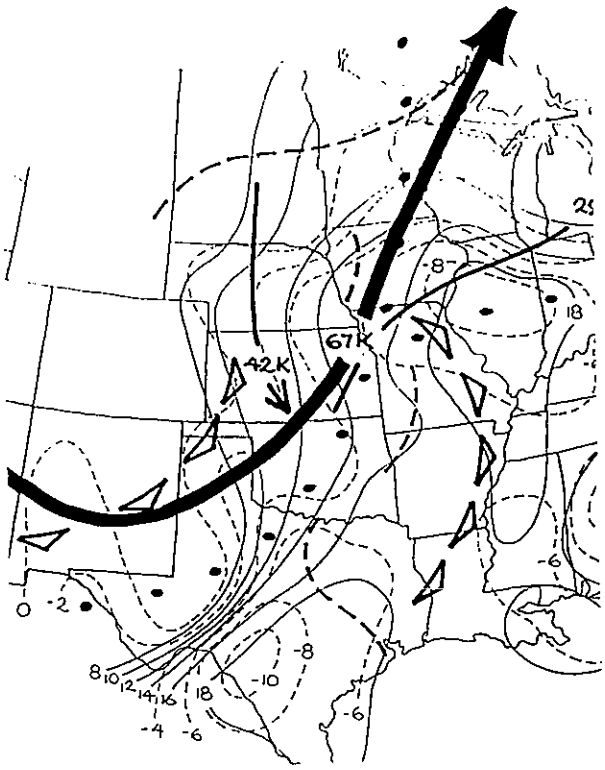
Surface 12 Noon CST June 1, 1986



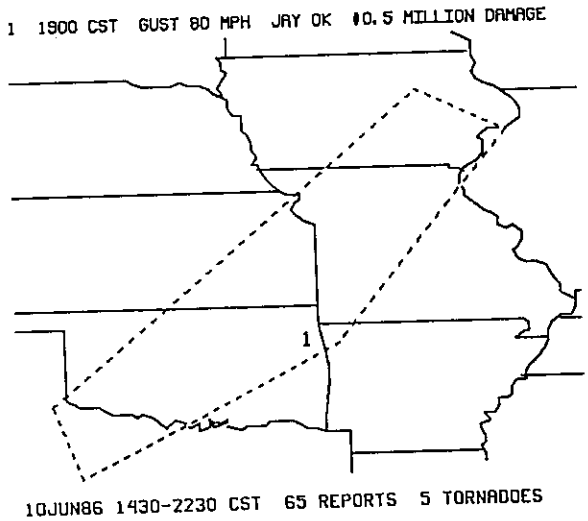
500 MB 6AM CST June 1, 1986

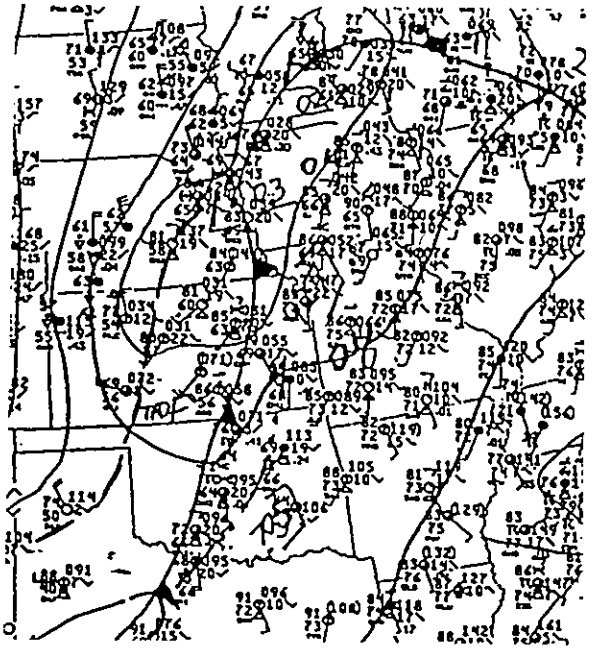


GOES 1:30PM CST June 1, 1986

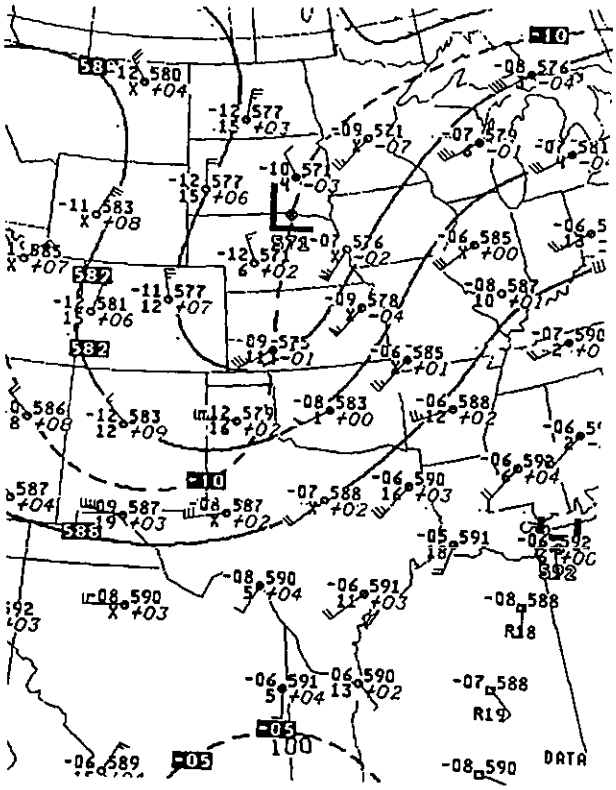


Composite 6PM CST June 10, 1986

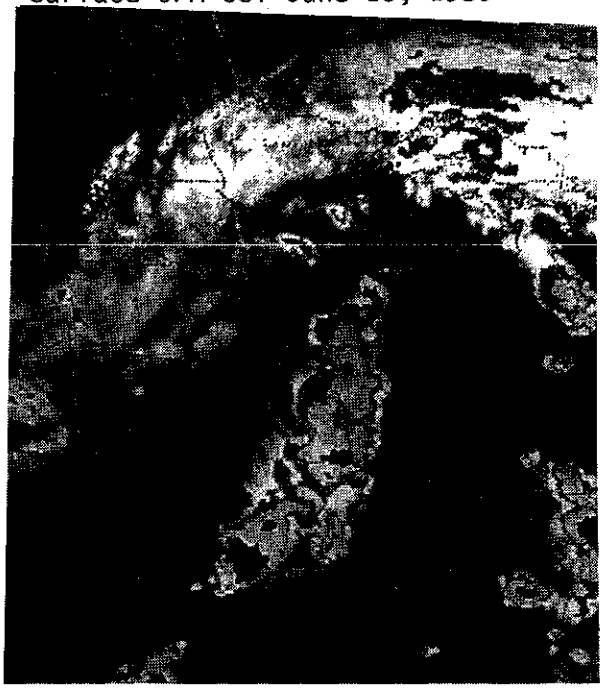




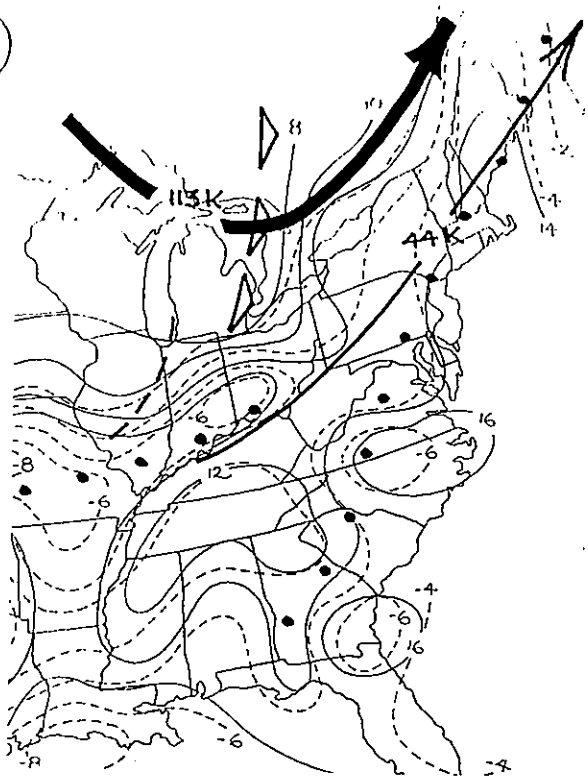
Surface 6PM CST June 10, 1986



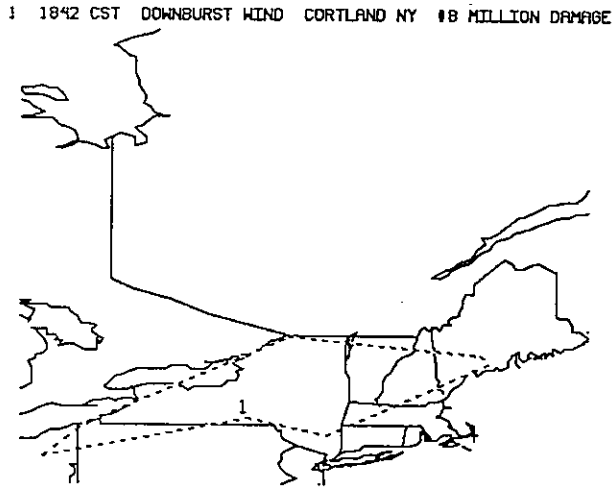
500 MB 6PM CST June 10, 1986

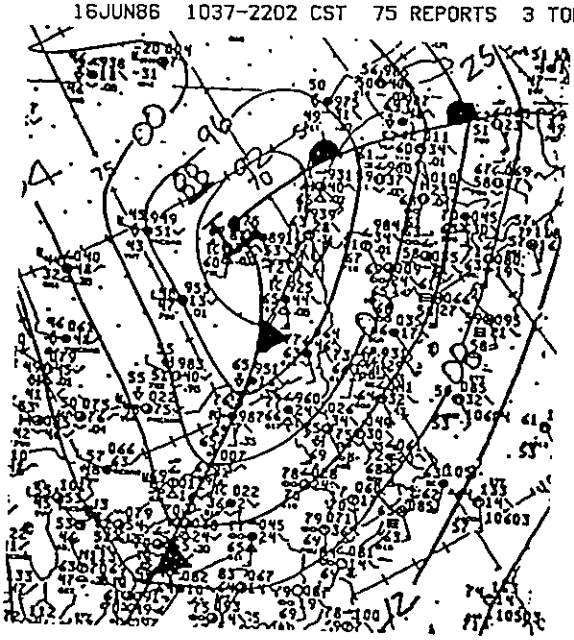


GOES 7PM CST June 10, 1986

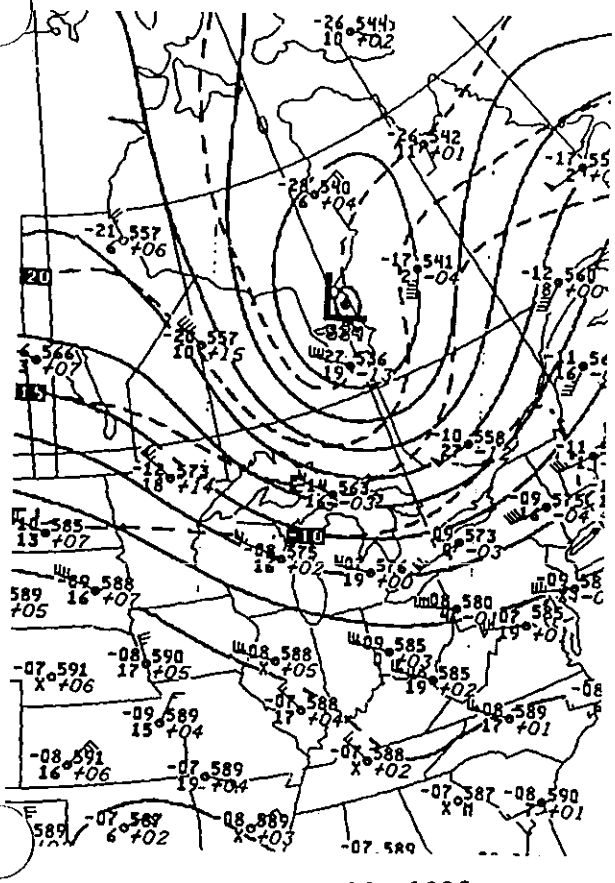


Composite 6PM CST June 16, 1986



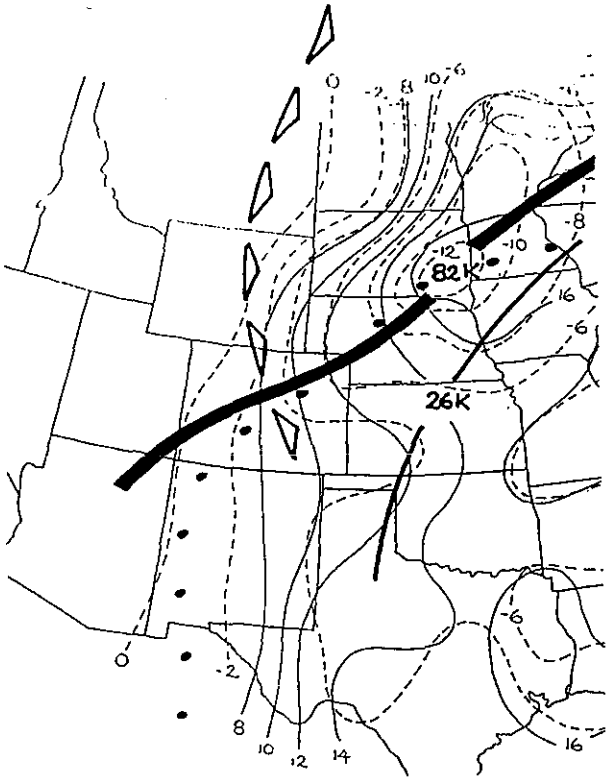


Surface 6PM CST June 16, 1986



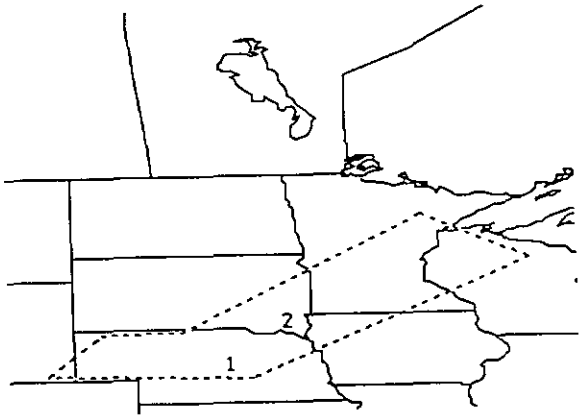
500 MB 6PM CST June 16, 1986

GOES 6PM CST June 16, 1986

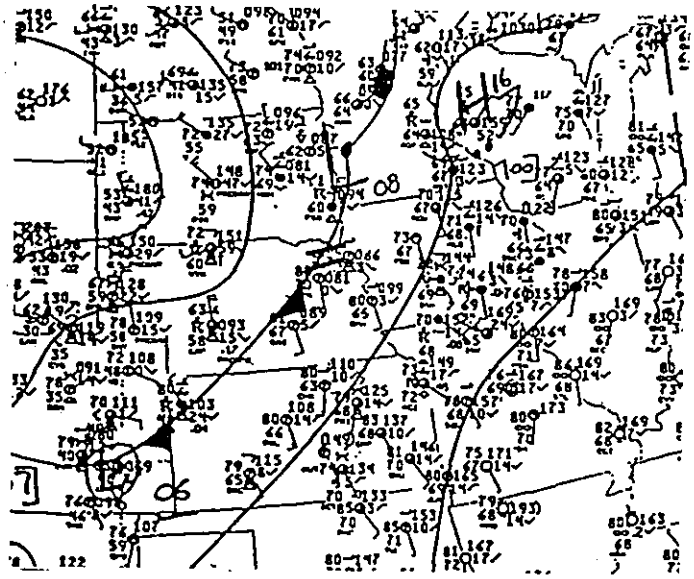


Composite 6PM CST June 21, 1986

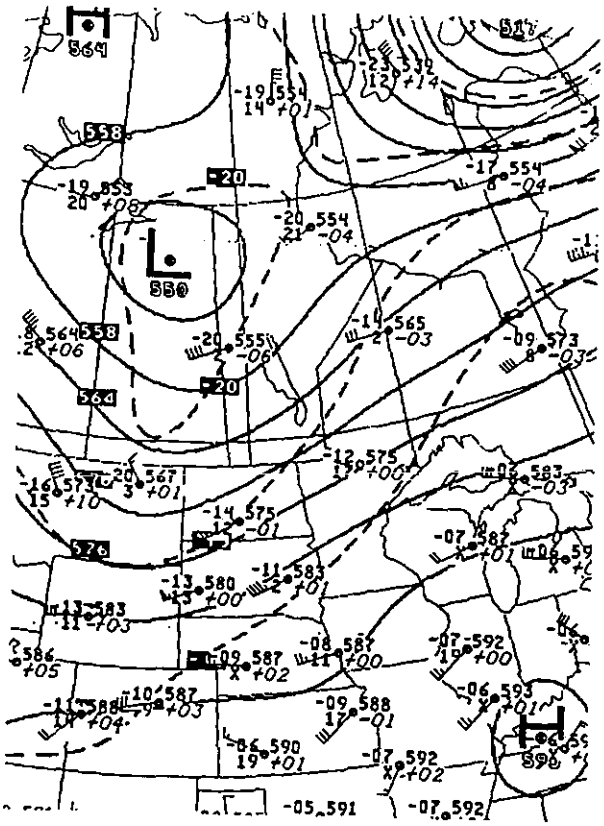
1 2100 CST GUST 100 MPH BURWELL NE
2 2250 CST GUST 95 MPH YANKTON SD



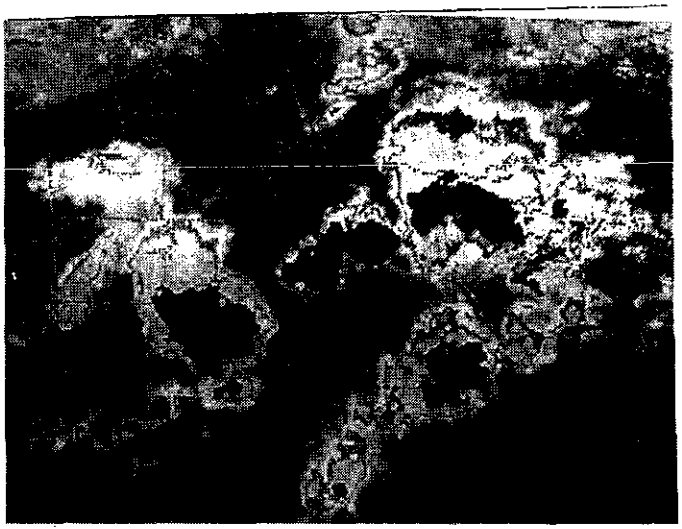
21JUN86-22JUN86 1430-0115 CST 96 REPORTS 9 TORNADOES



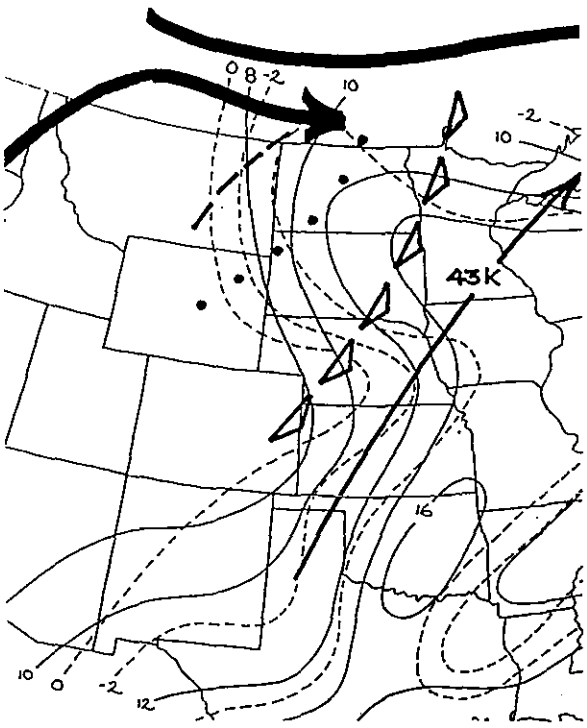
Surface 9PM CST June 21, 1986



500 MB 6PM CST June 21, 1986

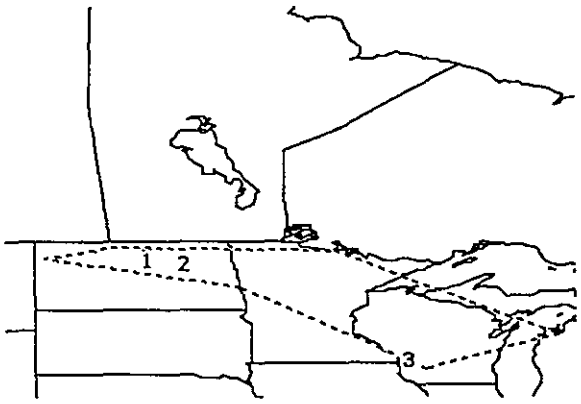


GOES 9PM CST June 21, 1986

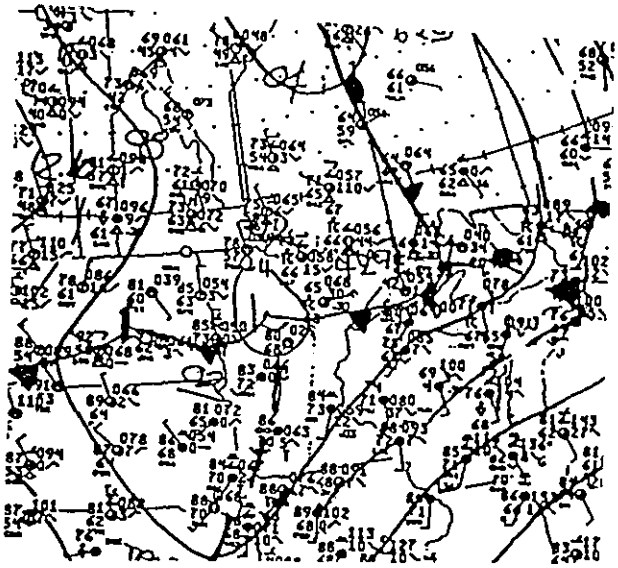


Composite 6PM CST June 26, 1986

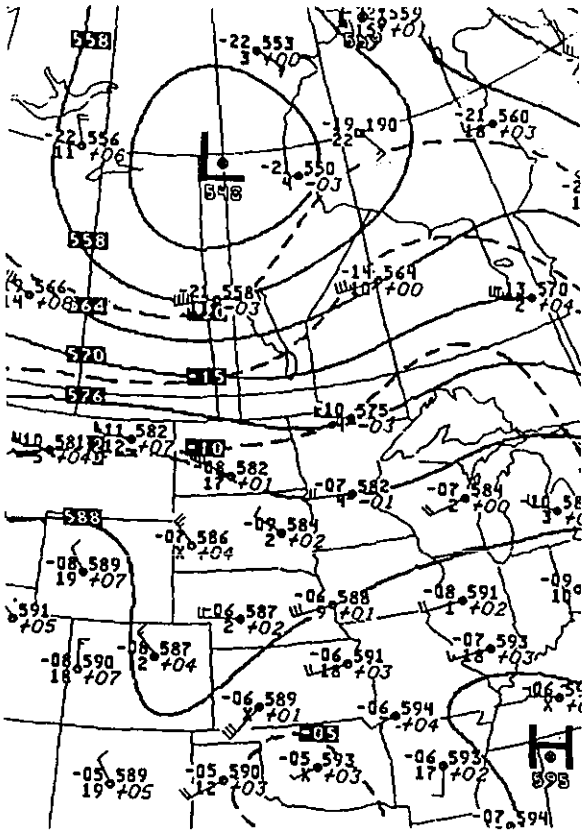
NO	TIME	EVENT	ST	LOCATION	PATH	KIL	INJ	DMG
1	1636	TORNADO-F3	ND	BOTTINEAU	8.0		1	6
2	1800	GUST 80 MPH	ND	DEVILS LAKE			12	6
3	2017	TORNADO-F2	WI	SPARTA	3.5			3



26JUN86 1530-2025 CST 26 REPORTS 6 TORNADOES

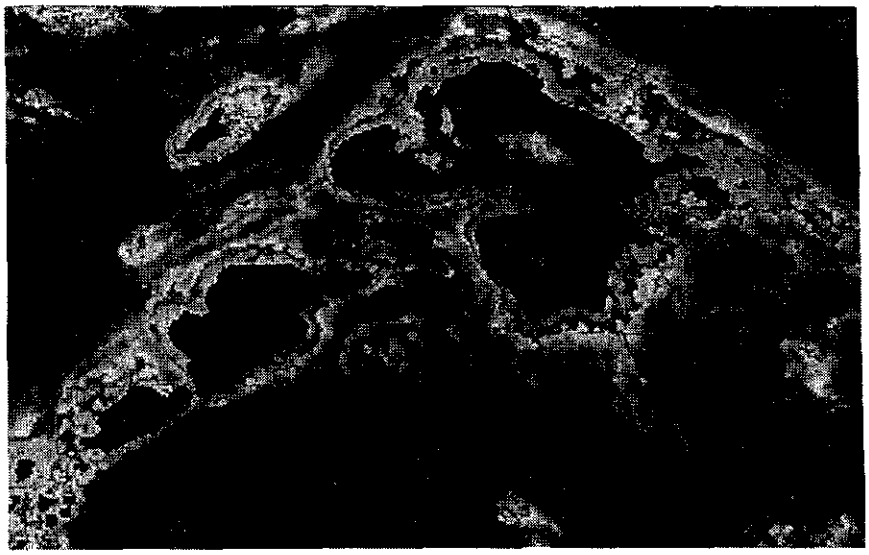


Surface 6PM CST June 26, 1986



500 MB 6PM CST June 26, 1986

GOES 4PM CST June 26, 1986



GOES 8PM CST June 26, 1986

No. 6 Severe Local Storm Warning and Event Summaries Available in AFOS. Preston W. Leftwich, Jr. and Lawrence C. Lee, January 1984, 10 p. (PB84 150291).

No. 7 Severe Thunderstorm Cases of 1984. John E. Hales, Jr. and Hugh G. Crowther, May 1985, 88 p. (PB85 210748/AS).

No. 8 A Minimum Assumption Tornado Hazard Probability Model. Joseph T. Schaefer, Donald L. Kelly and Robert F. Abbey, May 1985, 30 p. (PB85 206092/AS).

No. 9 Verification of Severe Local Storm Forecasts Issued By the National Severe Storms Forecast Center: 1984. Preston W. Leftwich, Jr., November 1985, 14 p., (PB86 128105/AS)

No. 10 Severe Local Storm Warning Verification: 1984. Preston W. Leftwich, Jr. and Leo A. Grenier, December 1985, 14 p., (PB86 148244)

No. 11 Severe Thunderstorm Cases of 1985. John E. Hales, Jr. and Hugh G. Crowther, February 1986, 51 p., (PB86 164340/AS).

No. 12 Severe Local Storm Warning Verification Preliminary Procedures. Leo A. Grenier and John T. Halmstad, April 1986, 10 p.

No. 13 Verification of Severe Local Storm Forecasts Issued by the National Severe Storms Forecast Center: 1985. Preston W. Leftwich, Jr., November 1986, 9 p., (PB87 137139/AS).

No. 14 Severe Local Storm Warning Verification: 1985. Preston W. Leftwich, Jr. and Leo A. Grenier, December 1986, 16 p., (PB87 137147/AS).

No. 15 An Examination of the National Weather Service Severe Local Storm Warning Program and Proposed Improvements. John E. Hales, Jr., January 1987, 32 p., (PB87).

NOAA SCIENTIFIC AND TECHNICAL PUBLICATIONS

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